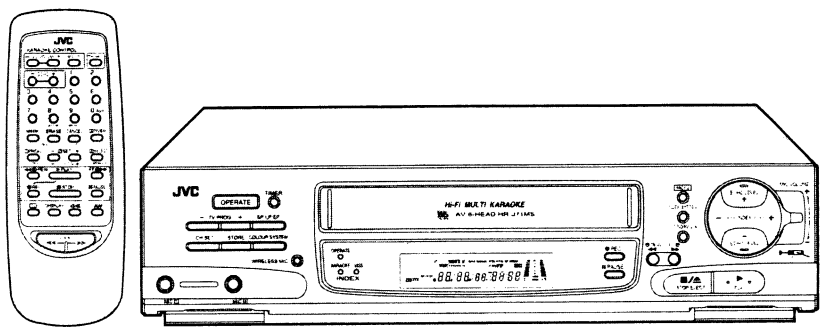
JVC

SERVICE MANUAL

VIDEO CASSETTE RECORDER

HR-J51MS/J71MS



Hi-Fi

VHS
PAL NTSC

SPECIFICATIONS *(The specifications shown pertain specifically to the model HR-J71MS)*

GENERAL

Power requirement		: AC 110 – 240 V~, 50/60 Hz
Power consumption		: 22 W
Temperature		
	Operating	: 5°C to 40°C
	Storage	: –20°C to 60°C
Dimensions (WxHxD)		: 400 x 94 x 343 mm
Weight		: 4.8 kg
Format		: VHS standard
Maximum recording time	(SP)	: 240 min. with E-240 video cassette (PAL/MESECAM) : 160 min. with T-160 video cassette (NTSC)
	(LP)	: 480 min. with E-240 video cassette (PAL/MESECAM)
	(EP)	: 480 min. with T-160 video cassette (NTSC)

VIDEO/AUDIO

Signal system	: PAL-type colour signal and CCIR monochrome signal, 625 lines/50 fields : NTSC colour and EIA monochrome signals, 525 lines/60 fields
Recording system	: Rotary two-head helical scan system with slant double-azimuth combination video heads
Signal-to-noise ratio	: 45 dB (Rohde & Schwarz noise meter)
Horizontal resolution	: 240 lines (PAL) 220 lines (NTSC)
Frequency range	: 70 Hz to 10,000 Hz (Normal audio) 20 Hz to 20,000Hz (Hi-Fi audio)
Input/Output	: RCA connectors (IN x 1 OUT x 1) : MIC input connectors

TUNER/TIMER

TV channel storage capacity		: 48 positions (+ AUX position "AU")
Channel coverage		: VHF Low 48.5 – 92 MHz CH 1 – 5 (China, Russia) CH E2 – E4 (Europe)
		High 104 – 300 MHz CH 6 – 12 (China, Russia) CH E5 – E12 (Europe) CATV Channels
		UHF 470 – 870 MHz CH 13 – 57 (China, Russia) CH E21 – E69 (Europe) CH 21 – 69 (U.K.)
Aerial output		: UHF channels 24 – 27/ (E32 – E40) (adjustable)
Programme capacity		: 1-year/8-programme timer
Memory backup time		: 3 min. minimum

ACCESSORIES

Provided accessories	: Aerial cable, Infrared remote control unit, "R03/UM-4" battery x 2 Conversion plug, Microphone, "R6/UM-3" battery x 2, Screwdriver, Feeder cable, Audio cable (RCA-RCA), Video cable, AC power cord, Karaoke instruction cassette tape

* Hi-Fi audio recording in NTSC EP mode is not possible.

Specifications shown are for SP mode unless otherwise specified.
Design and specifications subject to change without notice.

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No. 82428
August 1994

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The following table lists the differing points between Models (HR-J51MS and HR-J71MS) in this series.

	HR-J51MS	HR-J71MS
Hi-Fi AUDIO	—	○

— : NOT USED ○ : USED

Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▒) parts are critical for safety.
   Replace only with specified part numbers.
   Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

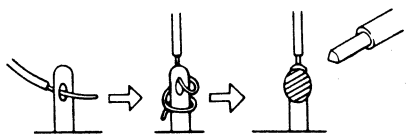


Fig. 1

7. Observe that wires do not contact heat producing parts (heat-sinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10—15 kg of force in any direction will not loosen it.

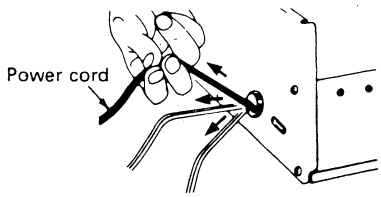


Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.

    1) **Connector part number** : E03830-001
    2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

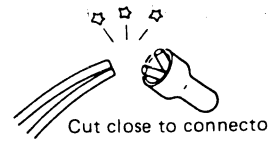


Fig. 3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

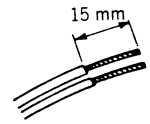


Fig. 4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

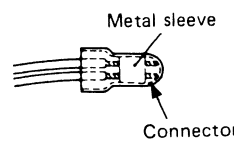


Fig. 5

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

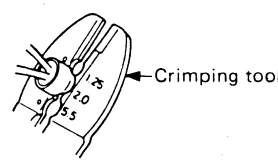


Fig. 6

(5) Check the four points noted in Fig. 7.

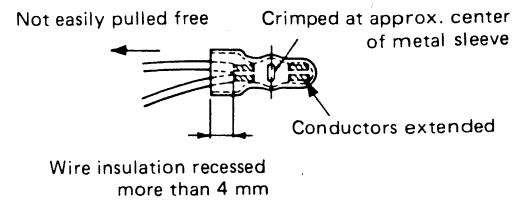

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig. 7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. **Insulation resistance test**
   Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. **Dielectric strength test**
   Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. **Clearance distance**
   When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

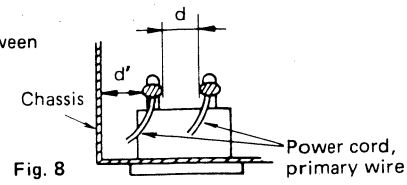


Fig. 8

4. **Leakage current test**
   Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).
   Measuring Method: (Power ON)
   Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following tabie 2.

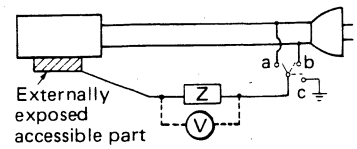


Fig. 9

5. **Grounding (Class I model only)**
   Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).
   Measuring Method:
   Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

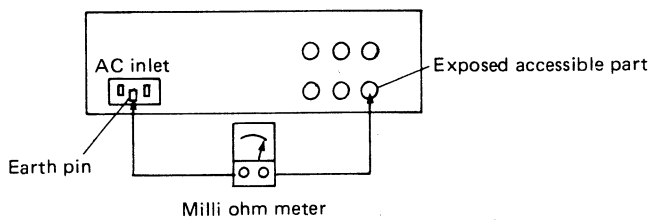


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R ≧ 1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 minute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	—	AC 1 kV 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R ≧ 10 MΩ /500 V DC	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	0.15 μF, 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

INSTRUCTIONS

Safety Precautions

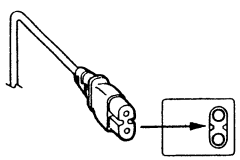
The rating plate and the safety caution are on the rear of the unit.

WARNING: DANGEROUS VOLTAGE INSIDE
WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

The OPERATE button does not completely shut off mains power from the unit, but switches operating current on and off.

This unit is produced to comply with Directives 76/889/EEC, 82/499/EEC, 87/308/EEC and Standard IEC Publ. 65.

CAUTION



- To avoid electric shock or damage to the unit, first firmly insert the small end of the AC power cord into the recorder until it is no longer wobbly, and then plug the larger end of the AC power cord into an AC outlet.
- When you are not using the recorder for a long period of time, it is recommended that you disconnect the power cord from the AC outlet.
- Dangerous voltage inside. Refer internal servicing to qualified service personnel. To prevent electric shock or fire hazard, remove the power cord from the AC outlet prior to connecting or disconnecting any signal lead or aerial.
- Use the conversion plug (provided) depending on the type of your AC wall outlet.

IMPORTANT:
1. This recorder can also receive SECAM colour television signals for recording and playback.
2. Recordings made of SECAM television signals produce monochrome pictures if played back on another video recorder of SECAM standard, or do not produce normal colour pictures if played back on another video recorder of PAL standard.
3. SECAM prerecorded cassettes or recordings made with a SECAM video recorder produce monochrome pictures when played back with this recorder.

Video tapes recorded with this video recorder in the LP (Long Play) or EP (Extended Play) mode cannot be played back on a single-speed video recorder.

POWER SYSTEM
This set operates on voltage of AC110 – 240 V~, 50/60 Hz with automatic switching.

WARNING
Pre-recorded tapes, records or discs should not be re-recorded without the consent of the owners of copyright in the sound recording and in any copyright musical or literary work embodied in that recording as this constitutes an infringement of copyright.

IMPORTANT:
- Please read the "Precautions" section of this instruction manual before installing or operating the recorder.

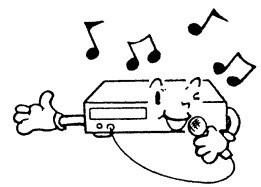
VHS PAL NTSC HQ

- Only cassettes marked "VHS" can be used with this video recorder.
- HQ VHS is compatible with existing VHS equipment.

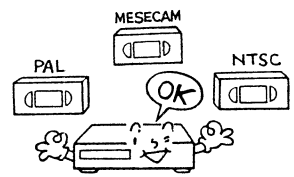
Contents

Some of your video recorder's features

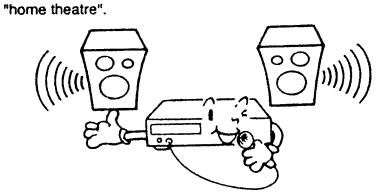
Karaoke With Various Functions
You can fully enjoy karaoke video with a wide selection of pro-style features including Karaoke Control Centre, wireless microphone, karaoke remote operation, and more.



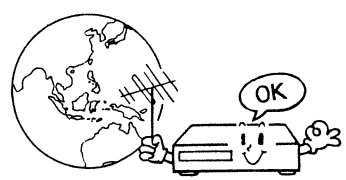
Multi-System Compatibility
You can enjoy watching programmes and software from many different countries.



Hi-Fi Stereo Sound
Powerful stereo sound for Karaoke singing and for your "home theatre".



Multi-System Tuner (B/G, D/K, I)
Makes it possible to receive TV programmes in Hong Kong and most of other countries in Asia.



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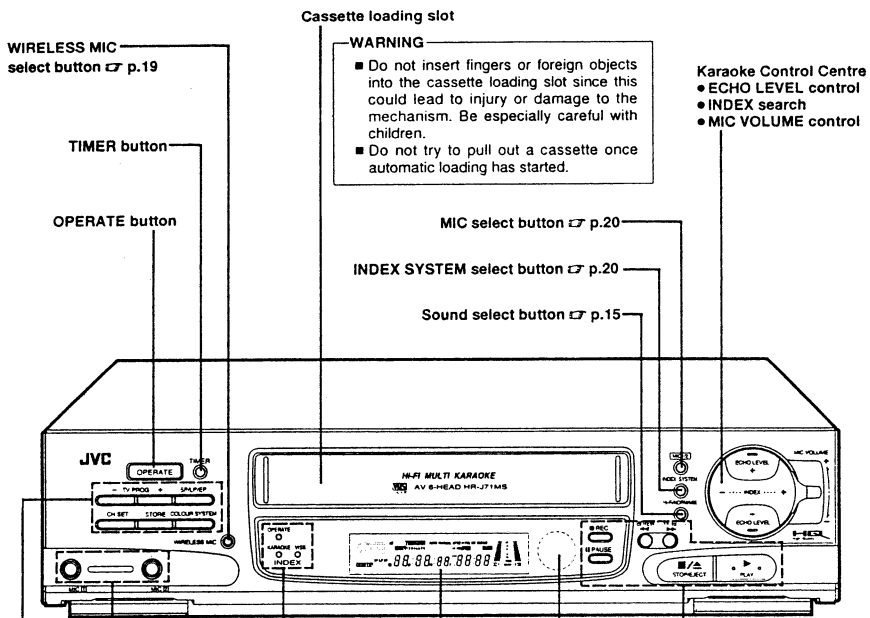
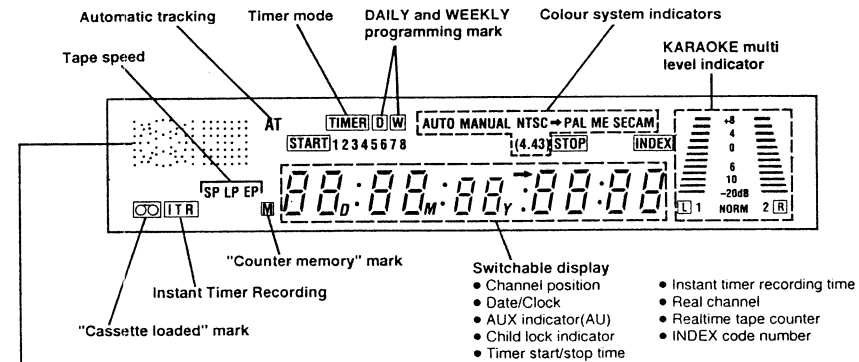
Controls And Indicators

Front Panel


Cassette loading slot
WIRELESS MIC select button ☞ p.19
WARNING
■ Do not insert fingers or foreign objects into the cassette loading slot since this could lead to injury or damage to the mechanism. Be especially careful with children.
■ Do not try to pull out a cassette once automatic loading has started.
Karaoke Control Centre
• ECHO LEVEL control
• INDEX search
• MIC VOLUME control
TIMER button
OPERATE button
MIC select button ☞ p.20
INDEX SYSTEM select button ☞ p.20
Sound select button ☞ p.15
JVC
OPERATE
HI-FI MULTI KARAOKE
AV 6-HEAD HR-J71MS
MIC input connectors
Display panel
Basic operation buttons
Indicators
• OPERATE
• KARAOKE INDEX
• VISS INDEX
Infrared beam sensor window

TV PROG. +/–	to scan to a TV programme you want.
SP/LP/EP	to select the recording tape speed.
CH SET	to engage the Tuning mode. ☞ p.12
STORE	to store a TV station in the Tuning mode. ☞ p.12
COLOUR SYSTEM	to select the appropriate colour system. ☞ p.25

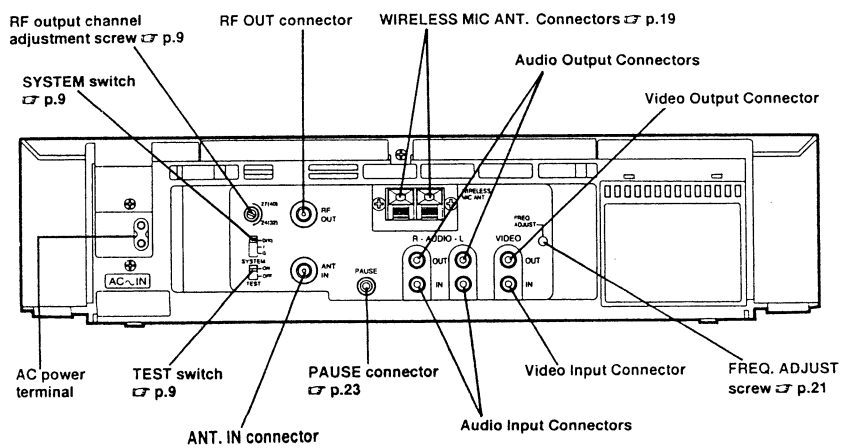
Display Panel



Symbolic mode indicators

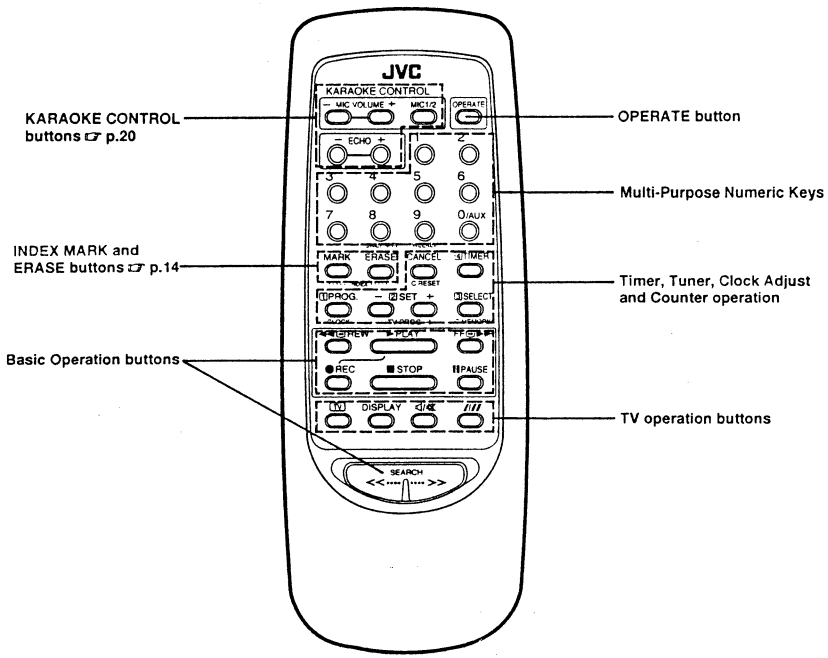
PLAY:	▷	FF VARIABLE SHUTTLE SEARCH:	▷ ⏩	STILL: FORWARD SLOW	▷ ⏸
FF:	⏩	REVERSE PLAY:	◁	RECORD:	●
REW:	⏪	REW VARIABLE SHUTTLE SEARCH:	◁ ⏪	RECORD PAUSE:	● ⏸

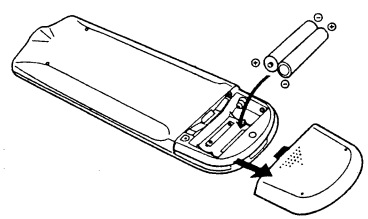
Rear Panel



Controls And Indicators (cont'd)

Wireless Remote Control





Installing Batteries

1. Open the battery compartment cover.
2. Insert 2 "R03/UM-4"-size batteries (provided) in the correct directions.
3. Replace the cover.

How To Use

The remote control can operate most of your video recorder's functions, as well as basic functions of designated JVC TV sets.

- Point the remote control toward the sensor window.
- The maximum operating distance of the remote control is about 8 m.

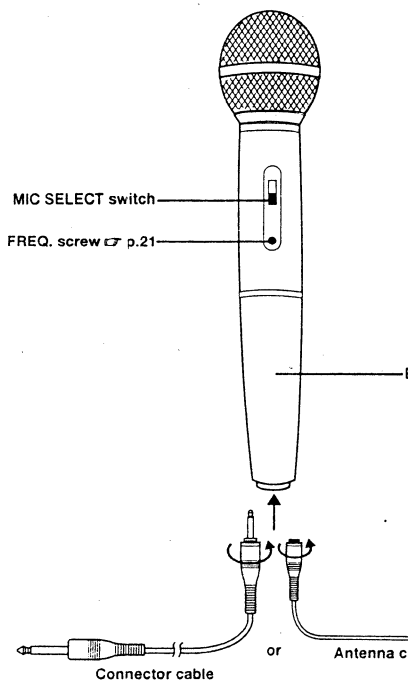
TV Operation

You can also use the recorder's remote control to operate a JVC television.

To operate your TV, press and hold down the TV button while you press OPERATE, or TV PROG. +/–, or MIC VOLUME +/–, or DISPLAY (for the TV's on-screen display function), or ///// (to select either Main or Sub programmes), or ◁/✕ (to mute the TV's sound).

- TV channel cannot be changed using the numeric keys.

Microphone



How To Use

To Use As A Wired Microphone

1. Insert the connector cable to the end of the microphone as illustrated and turn it clockwise to fix.
2. Set the MIC SELECT switch to "WD".

To Use As A Wireless Microphone

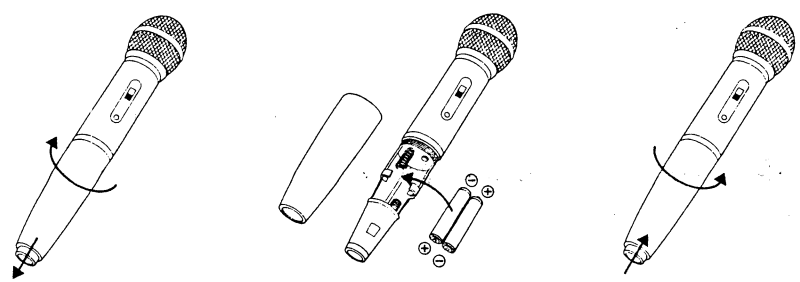
1. Insert the antenna cable to the end of the microphone as illustrated and turn it clockwise to fix.
2. Set the MIC SELECT switch to "WL".

ATTENTION

When you are not using the microphone, it is recommended to set the MIC SELECT switch to OFF; otherwise the batteries will discharge even when not in use.

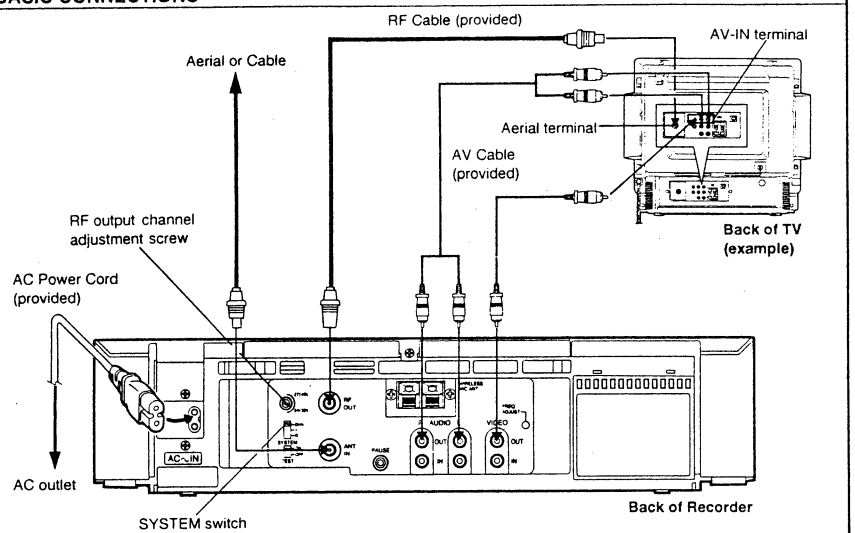
Installing Batteries

1. Unscrew and remove the battery compartment cap as illustrated.
2. Insert 2 "R6/UM-3"-size batteries (provided) in the correct directions.
3. Screw the cap back on as illustrated.



Installation

BASIC CONNECTIONS



It's essential that your video recorder be properly connected. Follow these steps carefully. THESE STEPS MUST BE COMPLETED BEFORE ANY VIDEO OPERATION CAN BE PERFORMED.

A RECORDER-TO-TV CONNECTION

RF CONNECTION

For TV sets without AV input terminals:

1. Connect the TV aerial cable to the recorder.
2. Connect the recorder with the provided RF cable to the TV's aerial terminal.

AV CONNECTION

For TV sets with AV input terminals:

1. Connect the aerial, recorder and TV as per "RF CONNECTION".
2. Connect the recorder to the TV's AV-IN terminals.

B CONNECT RECORDER TO WALL OUTLET

1. First, firmly insert the small end of the AC power cord into the recorder, and then plug the larger end of the AC power cord into the AC outlet.
   - Use the conversion plug (provided) depending on the type of your AC wall outlet.

C SELECT TELEVISION SYSTEM

Set the SYSTEM switch to the appropriate position according to your TV system. (Refer to the chart below.)

Major countries	Colour TV broadcast system	Switch position
China, Mongolia	PAL D/K	D (K)
Russia	SECAM D/K	
Hong Kong	PAL I	I
Indonesia, Singapore, Thailand, Malaysia	PAL B/G	G

NOTES:

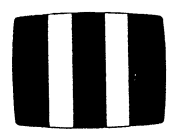
- If no colours appear on the screen when using a multi-system television with its system select switch set to AUTO, change the switch position to correspond to the recorder's RF system select switch (D(K), I or G).
- For more information on multi-system compatibility, ☞ p.24

D ADJUST VIDEO CHANNEL

With an RF connection, the video recorder sends picture and sound signals through the connecting cable to your TV on a UHF channel. Your video recorder's RF converter channel is preset to a frequency corresponding to UHF channel 25 according to the Chinese channel system, or UHF channel 36 according to the European channel system.

TEST SIGNAL

1. Turn on the recorder.
2. Set the TEST switch to ON.
3. Set your TV to UHF channel 25 or 36 according to your television's UHF channel system, and fine-adjust it until you bring in the two vertical white bars on the screen most clearly.
4. Reset the TEST switch to OFF.



NOTE:

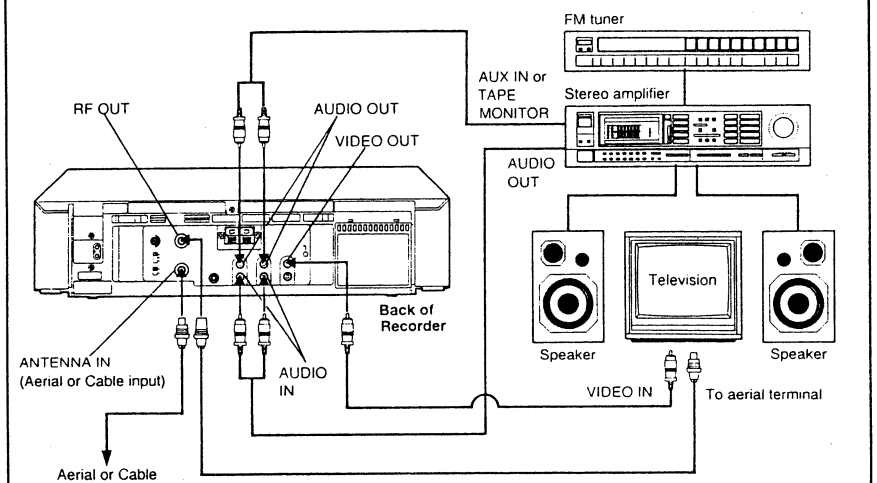
If some interference noise is seen on the screen because of broadcasts on neighbouring channels, adjust the RF output channel adjustment screw to change the video channel from UHF channel 25 or 36. This is possible for UHF channels 24 to 27 according to the Chinese channel system, or UHF channels 32 through 40 according to the European channel system.

IMPORTANT:

To operate the recorder with your TV using an RF connection, it is always necessary to set your TV's channel to VIDEO CHANNEL. With an AV connection, set the TV to the VIDEO (or AV) mode.

Installation (cont'd)

CONNECTING TO HI-FI STEREO SYSTEM



If you have a Hi-Fi stereo system, you can connect your video recorder to it so that the sound can be heard through your Hi-Fi system, to enhance your karaoke enjoyment. Please make these additional connections:

Hi-Fi AUDIO CONNECTION

1. Connect the AUDIO IN L and R connectors of the recorder to the recording output terminals of the amplifier.
2. Connect the AUDIO OUT L and R connectors of the recorder to the AUX IN or TAPE MONITOR terminals of the amplifier.

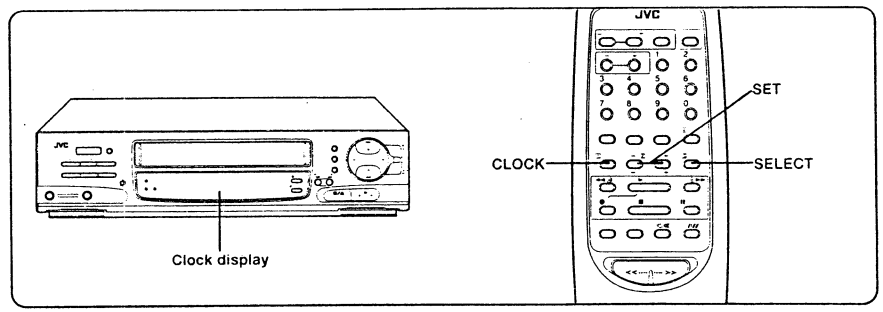
NOTES:

- Make sure L and R are correct when connecting the audio input and output connectors of the recorder to a stereo amplifier.
- When listening to sound from the connected stereo system, turn down the sound volume of the TV completely.

CAUTION:

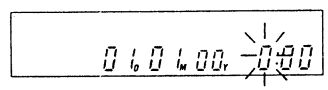
- This recorder has a dynamic range of more than 90 dB with regards to its hi-fi audio capability. It is recommended that you check the maximum level if you are going to listen to the hi-fi audio signals through a stereo amplifier. A sudden surge in speaker input may cause speaker damage.
- Some speakers and televisions are specially shielded to prevent television interference. If both are of the non-shielded type, do not place the speakers adjacent to the TV set, otherwise the video playback picture may be adversely affected.

Setting The Clock

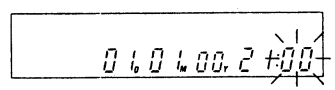


Since your video recorder bases all of its timer recording start and stop "decisions" on the time kept by its built-in clock, accurate setting of this clock is crucial for proper timer-recording results.

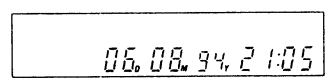
1. **Press CLOCK.**



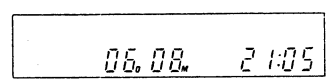
2. **Press SET to set the hour, and then SELECT.**



3. **Repeat step 2 to set the minute, day , month and year.**



4. **Press CLOCK.**



TO MAKE CORRECTIONS

Advance with SELECT to the item you wish to change and input new data with SET.

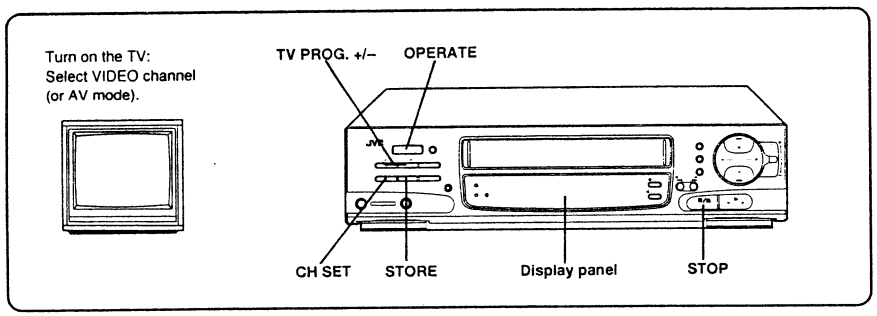
POWER FAILURE INDICATOR

The clock resets to "0:00" and starts blinking when there has been a power failure. Reset the time to return the clock display to normal.

NOTE:

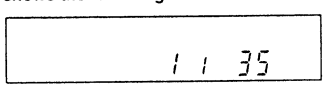
- If the day and month data is invalid (such as 31st April), the month digits are cleared automatically and the day digits will blink. Input again.

Setting The Tuner

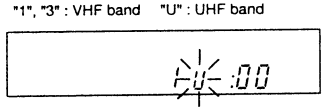


The procedure introduced here lets you assign receivable channels in your area to channel positions on your video recorder's tuner. Once stored, these can be accessed with the TV PROG. buttons.

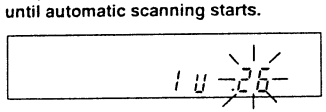
1. **Press OPERATE to turn on the recorder.**
2. **Keep CH SET pressed until the display panel shows the following.**



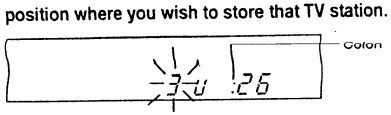
3. **Press CH SET.**
   - The band indicator will blink.
4. **Press TV PROG. to select "1", "3", or "U".**
   "1", "3" : VHF band "U" : UHF band



5. **Press CH SET.**
   - The tuning voltage indicator will blink.
   - Tuning voltage giving a rough reference of where tuning is being performed in the corresponding band.
6. **Keep TV PROG. + pressed for a few seconds until automatic scanning starts.**



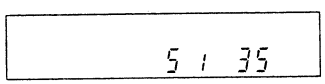
   - When a broadcast is detected, automatic scanning stops.
   - If you don't want to store the detected TV station, repeat step 6 for another station.
7. **Press CH SET.**
8. **Press TV PROG. to select the tuner channel position where you wish to store that TV station.**



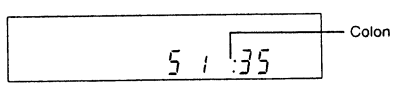
9. **Press STORE to store that TV station.**
   - The colon will disappear when the station is stored.
10. **Repeat steps 4 through 9 for other receivable TV stations.**
11. **Press STOP to disengage the channel set mode.**

TO DELETE STORED CHANNELS

1. Turn the TV PROG. dial in either direction to select the channel position you want to skip.
2. Press CH SET until the display panel shows the following.



3. Press CANCEL on the remote control unit to delete that TV station.

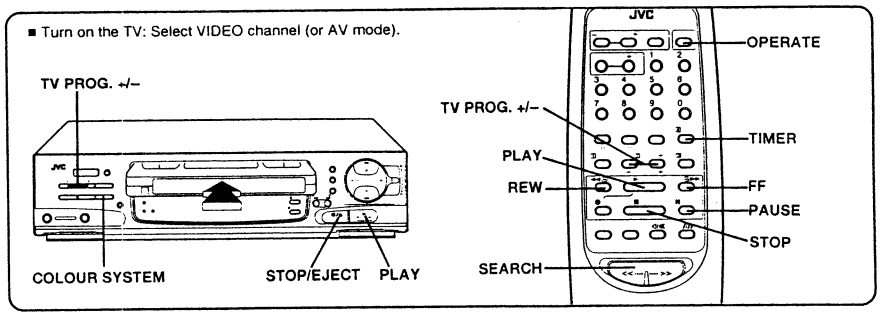


   - The colon will appear when the station is deleted. Channel position 5 can no longer be chosen by the TV PROG. buttons.
4. Press STOP to disengage the Channel Set mode.

Available channels in each band

Band Indicator	Channels
1	CH 1 – 5 (China, Russia) CH E2 – E4 (Europe)
3	CH 6 – 12 (China, Russia) CH E5 – E12 (Europe) CATV Channels
U	CH 13 – 57 (China, Russia) CH E21 – E69 (Europe) CH 21 – 69 (U.K.)

Playback



Basic Operations

IMPORTANT:
- Normally set colour system detection to "AUTO" by pressing the COLOUR SYSTEM button. If a tape is not played back correctly, try manual setting. ☞ p. 25.
- If viewing an NTSC or MESECAM tape, set the COLOUR SYSTEM button to match the type of TV being used. ☞ p. 26.
- For more information on multi-system compatibility, ☞ p. 24.

1. **Load a cassette.**
   - The recorder power will come on automatically.
   - The counter will re-set to "0:00:00" automatically.
   - If the safety tab on the cassette is removed, playback will start automatically.
2. **Press PLAY to start playback.**
3. **Press STOP to stop playback.**
   - To rewind the tape, press REW.
   - To fast-forward the tape, press FF.
   - To stop rewind or fast-forward, press STOP.
4. **Press STOP/EJECT on the recorder to eject the tape.**

Variable-Speed/High-speed Search, Still Playback/Frame Advance/Forward Slow Motion

During Playback or Still:
- Press either SEARCH button for variable-speed search.
- The more times the button is pressed, the faster the playback picture will move.
- To decrease speed, press the button for the opposite direction.

During Playback:
- Press FF for high-speed forward search, or REW for high-speed reverse search.
- For short searches, keep FF or REW pressed for more than 2 seconds. When released, normal playback will continue.
- Press PAUSE to view a still picture.
- Press again to advance the picture frame by frame.
- Press PAUSE for 2 seconds for slow motion.

Other Functions

Manual Tracking

Your video recorder is equipped with automatic tracking control. If there is picture distortion or "breaks" in the sound of Hi-Fi VHS tapes caused by mistracking, you can finely adjust tracking manually.

During Playback:
1. Press the recorder's TV PROG. +/– buttons simultaneously.
2. Press TV PROG. +/– to adjust tracking.
   - Press TV PROG. +/– simultaneously to return to automatic tracking.

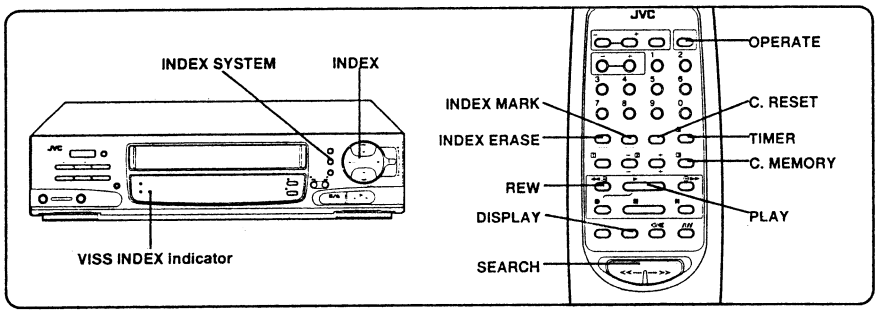
During Slow:
1. Simply press TV PROG. +/– to adjust tracking.

Repeat Playback

During Playback:
1. Press PLAY for more than 5 seconds, and release.
   - The Play indicator (▷) on the display panel will blink slowly.
   - The tape will be played all the way to the end, 20 times automatically, and then stop.
2. To stop playback at any time, press STOP.

NOTES:
- The recorder automatically stops when still continues for more than 5 minutes.
- If the still picture is unstable, use the TV PROG. buttons to correct the picture.
- During search playback, some noise bars will appear.
- When playing back LP recordings or NTSC recordings in the search, still, or frame-by-frame playback mode, the picture will be distorted, and there will be a loss of colour.
- There is no audio during search, slow, still, or frame-by-frame playback.
- When a new tape is inserted, the recorder enters the automatic tracking mode automatically.
- Tapes with monaural soundtracks (normal audio) are automatically played back in the NORM mode. When playing back tapes with Hi-Fi stereo soundtracks, ☞p.15.

Playback (cont'd)



Other Functions (cont'd)

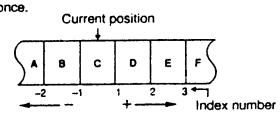
Index Search

Your recorder automatically marks index codes at the beginning of each recording. This function gives you quick access to any one of 99 index codes in either direction.

During Playback or Stop:

1. Press INDEX SYSTEM to make the VISS INDEX indicator appear on the display panel.
2. Press the right (or left) part of Karaoke Control Centre (labelled INDEX + or –).
   - "INDEX –1" or "INDEX 1" will be displayed on the display panel and search will begin in the corresponding direction.
3. If you wish to access index codes 2 through 99, press INDEX repeatedly until the correct index number is displayed.

Ex.: To locate the beginning of B from the current position, press INDEX – twice.
To locate the beginning of D from the current position, press INDEX + once.



- When the specified index code is found, playback will start automatically.
- During Stop, you can use the remote control's SEARCH buttons in the same way as Karaoke Control Centre.

To mark an index code manually

During Playback:

1. Press INDEX MARK.
   - The recorder will mark an index code at that location.

To erase an index code

During Playback or still:

1. Press INDEX ERASE.
   - The recorder will fast-forward to the nearest index code and erase it. Playback continues after the index code is erased.

NOTE:

- If the tape's safety tab has been removed, index codes cannot be marked or erased.

Counter Memory

During Playback:

1. Press DISPLAY until a counter reading appears on the display panel.
2. Press C.RESET at a point you wish to locate later.
   - The counter will read "0:00:00".
3. Press C.MEMORY.
   - The M indicator will light on the display panel.
4. When you wish to return to that point, press Stop and then Rewind.
   - The tape will rewind and stop at about "0:00:00" automatically.
5. To cancel the Counter Memory mode, press C.MEMORY again.

Next Function Memory

Your recorder can memorise what to do after rewind.

During Stop:

For automatic start of playback after the tape is rewound:

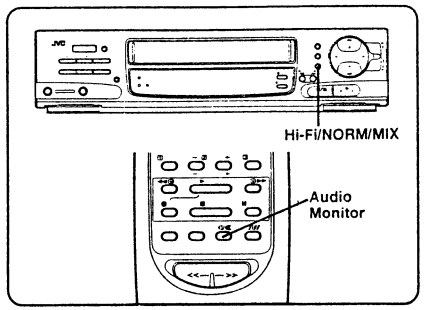
1. Press REW.
2. Press PLAY within 2 seconds.

For automatic power off after the tape is rewound:

1. Press REW.
2. Press OPERATE within 2 seconds.

For automatic timer standby after the tape is rewound:

1. Press REW.
2. Press TIMER within 2 seconds.



Soundtrack Selection

During Playback:

Your video recorder is capable of recording three soundtracks (HIFI L, HIFI R and NORM) simultaneously, and playing back the selected soundtrack.

- Pressing Audio Monitor on the remote control changes the track:

Track	Use:
L + R	for Hi-Fi stereo tapes.
L	for main audio of bilingual tapes.
R	for sub audio of bilingual tapes.

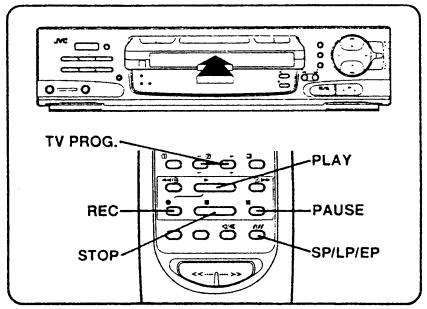
- Pressing Hi-Fi/NORM/MIX on the recorder changes the mode:

Mode:	Track: (on display panel)	Use:
HIFI	L and/or R	for Hi-Fi stereo tapes
NORM	NORM	for audio-dubbed tapes.
MIX	NORM + L and/or R	for audio-dubbed tapes.

NOTE:

- Normally use the L + R position. Then Hi-Fi stereo tapes are played back in stereo, and tapes with normal audio only are played back automatically in the NORM mode.

Recording



Basic Operations

IMPORTANT:

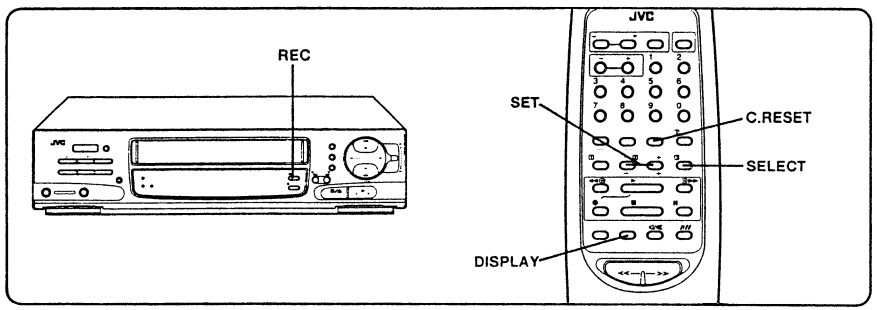
- Press the COLOUR SYSTEM button so "AUTO" lights up on the display panel.
- For more information on multi-system compatibility, ☞ p. 24.

1. **Load a cassette.**
2. **Press TV PROG. or the numeric keys to select the channel you wish to record.**
3. **Press SP/LP/EP to select the tape speed.**
4. **Press REC and PLAY simultaneously.**
5. **Press PAUSE to pause recording.**
6. **Press PLAY to resume recording.**
7. **Press STOP to stop recording.**

NOTES:

- To start recording with the recorder's REC button, press it once on its own.
- After pause, when recording is resumed, a few frames recorded before the pause may be overlapped by the new recording. This is meant to reduce picture distortion and is not a malfunction.
- The recorder automatically stops when record-pause continues for more than 5 minutes.
- If the REC button does not work, check to see if the cassette's safety tab has been removed.
- The channel cannot be changed while recording is in progress. To change the channel, engage the record-pause mode, then change the channel.
- The recorder automatically rewinds when the end of the tape is reached during recording.
- The recorder automatically places an index code on the tape every time recording begins. For information on the Index Search function, ☞ p. 14.
- Hi-Fi audio recording in NTSC EP mode is not possible.

Recording (cont'd)



Other Functions

Instant Timer Recording (Off Timer)

You can start a recording and then set the recorder to shut off automatically after a set duration.

During Record:

1. Press REC on the recorder. "ITR" and "0:30" indications appear, advising that power will switch off after 30 minutes.
2. Press REC again to delay the off-time by 30-minute increments (up to 4 hours).
   - For more precise setting, use the remote control's SELECT and SET buttons to set the exact time required (possible up to 8 hours and 59 minutes).

To Watch Another Programme While Recording

During Record:

1. Use the channel controls on the TV to select the other channel you wish to view.
   - The programme selected with the TV's channel controls will appear on the TV screen while the one selected with the video recorder's channel controls will be recorded on the tape.

Elapsed Recording Time Indication

When you need to know the exact time of a recording.

1. Press DISPLAY until a counter reading appears on the display panel.
2. Press C.RESET before starting recording or playback.
   - The counter will be reset to "0:00:00" and show the exact elapsed time as the tape runs.

Display Button

When you wish to check the time, date, or counter reading

1. Press DISPLAY to display the current clock time.
2. Press DISPLAY again to display the current date.
3. Press DISPLAY again to display the counter reading.

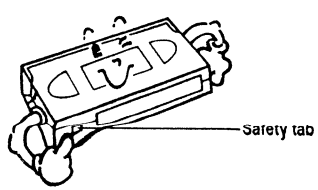
Usable Cassettes And Their Recording Times

This video recorder can record on regular VHS and Super VHS cassettes. However, it will record and play back regular VHS video signals only. It is not possible to play back a recorded Super VHS tape.

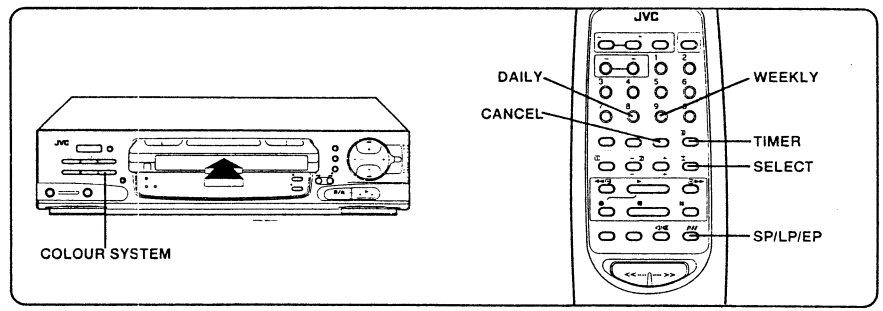
Type of Cassette	Recording/Playback Time (minutes)		Recording/ Playback System
	SP Speed	LP Speed	
E-240	240	480	PAL/MESECAM
E-180	180	360	PAL/MESECAM
E-120	120	240	PAL/MESECAM
E-90	90	180	PAL/MESECAM
E-60	60	120	PAL/MESECAM
E-30	30	60	PAL/MESECAM
Type of Cassette	Recording/Playback Time (minutes)		Recording/ Playback System
	SP Speed	EP Speed	
T-160	160	480	NTSC
T-120	120	360	NTSC
T-90	90	270	NTSC
T-60	60	180	NTSC
T-30	30	90	NTSC

Accidental Erasure Prevention

To prevent accidental recording on a recorded cassette, remove its safety tab. To record on it later, cover the hole with adhesive tape.



Timer-Recording



Timer programming can be done with the remote control while referring to the recorder's display panel. Make sure that the display panel shows the correct current time.

Preparation

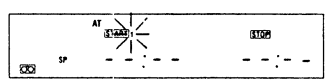
Insert a cassette with the safety tab in place.

- The recorder power will come on automatically.

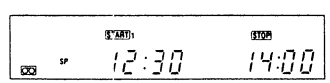
IMPORTANT:

- Press the COLOUR SYSTEM button so "AUTO" lights up on the display panel.
- For more information on multi-system compatibility, ☞ p. 24.

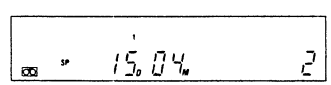
1. **Press PROG. until the display panel shows the following.**



   - You are ready to input data into Program No. 1.
   - To change the program number, press PROG.
2. **Press SELECT.**
3. **Press SET to set the start hour, and then SELECT.**
4. **Repeat step 3 to set the minute and stop time.**



5. **Press SET to set the day, month and channel, and then SELECT.**

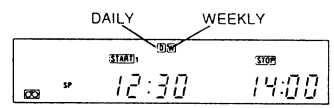


   - The current program number will blink.
   - If you need to set another program, repeat steps 1 through 5.

6. **Press SP/LP/EP to select the tape speed.**

   WEEKLY program : During steps 1 through 6, press numeric key "9" on the remote control.

   DAILY program (Mon. – Fri.) : During steps 1 through 6, press numeric key "8" on the remote control.



7. **Press TIMER.**
   - The recorder will enter the Timer mode and power will go off.

TO MAKE CORRECTIONS

Press SELECT to make the item you want to change blink, and input new data.

TO CHECK AND CANCEL PROGRAMS

To check preset programs:

1. Press PROG. until the program settings are displayed.
   - Program 1 is displayed with the number blinking.
2. Press SELECT to review the program contents in succession.
3. To check another program, press PROG. again.

To cancel the program:

4. Press CANCEL.
   - You can press CANCEL at any stage while the program is open.

TO USE THE RECORDER AFTER SETTING TO THE TIMER MODE

For safety, your recorder disables all other functions while in the Timer mode.

- Press TIMER to disengage the Timer mode.
- To re-engage the Timer mode, press TIMER.

Timer-Recording (cont'd)

Error Indications

The following error indications may appear on the recorder when you press the TIMER button to engage the Timer Standby mode. Here's why, and what you should do.

■ "TIMER" and "📼" on the display panel continue blinking.
WHY: There is no cassette in the recorder.
WHAT TO DO: Insert a cassette.

■ The cassette is automatically ejected. "TIMER" and "📼" continue blinking.
WHY: The inserted cassette has its safety tab removed.
WHAT TO DO: Insert a cassette with its safety tab intact. Or cover the safety tab hole of the cassette with adhesive tape and re-insert it. ☞ p.16.

■ "TIMER" blinks for 10 seconds and the Timer Standby mode is cancelled.
WHY: There are no preset programs in memory, or they have all been incorrectly preset.
WHAT TO DO: Check the programmed data and re-program it as necessary. Press TIMER again.

Other Indications

■ "TIMER" steady lit (with clock display).
WHY: The recorder is in the Timer Standby mode. This is the normal display you should see when you press the TIMER button.

■ " ◯ " and "TIMER" steady lit.
WHY: Normal display while timer-recording is in progress.

■ The cassette was ejected, with power off and "TIMER" and "📼" are blinking.
WHY: This means that the end of the tape was reached while timer-recording was in progress. Therefore, the preset program may not be recorded in its entirety.

■ "0:00" blinking.
WHY: This means the clock must be set. It's displayed when time-keeping is terminated due to a power failure or because the recorder's power plug was pulled from the AC outlet.
WHAT TO DO: Set the clock. ☞ p.11.
■ If power was interrupted, it's also likely that all preset timer programming data has been erased. Please check and re-program as necessary.

Locking The Recorder's Controls

To avoid unwanted operation and prevent accidental recording...
1. Press the remote control's OPERATE button to turn the recorder's power off. Keep this button pressed for about 2 more seconds after the power LED indicator has gone off.
   ■ The Child Lock indicator (–) will appear on the display panel.
2. Child Lock is cancelled when you switch the recorder's power on with the remote's OPERATE button.
   ■ Pressing the TIMER button during timer-recording also cancels the Child Lock mode.

NOTES:
■ While Child Lock is engaged, make sure you keep your remote control in a safe place inaccessible to children.
■ Timer-recording is possible in the Child Lock mode. After timer-recording is done, Child Lock remains in effect.

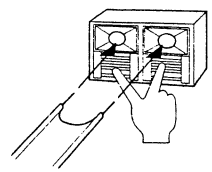
Karaoke

The Karaoke Control Centre on the recorder's front panel gives you direct access song search, and sound volume/echo control, which you can do with remote control as well. The provided microphone can also be used as a wireless microphone.

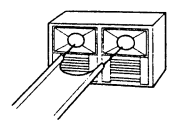
Preparation

To use the microphone as a wireless microphone

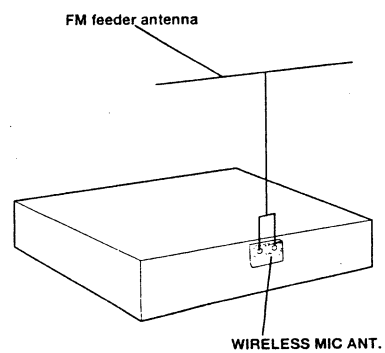
You need to connect the provided FM feeder cable to the recorder.
1. While you press the lever which is located below the WIRELESS MIC ANT. connectors, insert the provided FM feeder cable into the connectors.



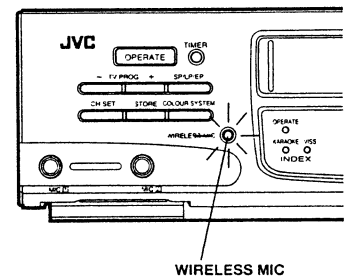
2. Release the lever.



3. Hang the FM feeder cable on the wall behind the recorder so that the cable forms a "T" as illustrated.

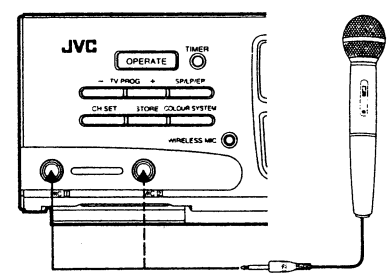


4. Follow steps 1 and 2 of "To Use As A Wireless Microphone". ☞ p.7
5. Press the recorder's WIRELESS MIC button to make the button light.



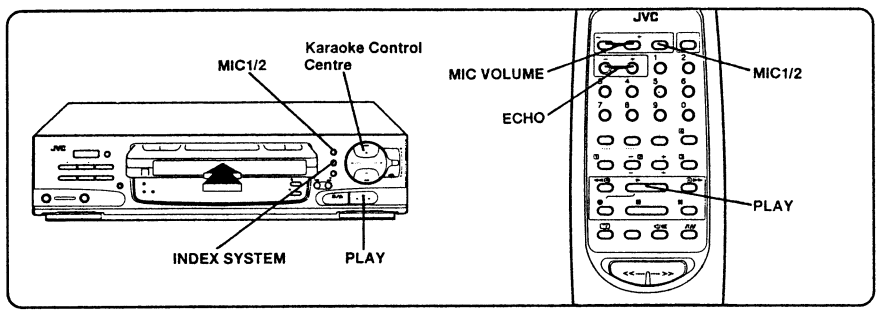
To use the microphone as a wired microphone

1. Follow steps 1 and 2 of "To Use As A Wired Microphone". ☞ p.7
2. Connect the microphone to the recorder's front panel MIC1 or MIC2 connector.



NOTES:
■ The maximum operating distance of the wireless microphone is about 10 m.
■ You can use up to 3 microphones (2 wired and 1 wireless) at the same time with this recorder.

Karaoke (cont'd)

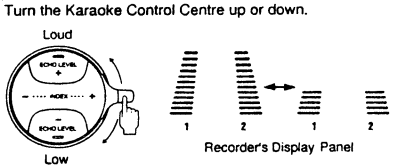


1. **Turn on the TV and select VIDEO channel (or AV mode.)**
2. **Insert a pre-recorded Karaoke tape.**
   - If the safety tab on the cassette is removed, playback will start automatically.
3. **Press PLAY.**
4. **Start singing.**

VOLUME ADJUSTMENT

Adjust the microphone volume as necessary.

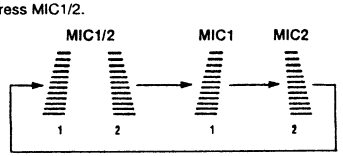
1. Turn the Karaoke Control Centre up or down.



- The remote control's MIC VOLUME +/– buttons can also be used to adjust the microphone volume.

To adjust the volume of MIC1 and MIC2 (wireless) respectively

1. Press MIC1/2.



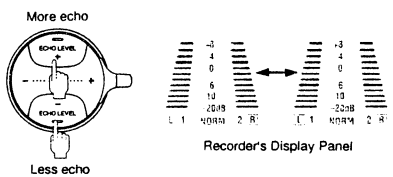
- Pressing MIC1/2 changes the recorder's display as illustrated above and the corresponding microphone volume level will be displayed.

2. While the corresponding microphone volume level is displayed, use the recorder's Karaoke Control Centre or remote control's MIC VOLUME buttons to adjust the microphone volume.
   - The display panel will automatically return to the current display after about 5 seconds.

ECHO CONTROL

You can add as much echo to your voice as you like.

1. Press the upper (or lower) part of Karaoke Control Centre (labelled ECHO LEVEL + or –).



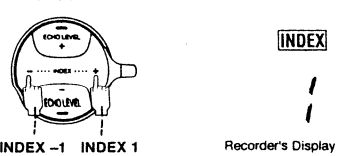
- The same echo level is applied to both MIC1 and MIC2.
- The remote control's ECHO +/– buttons can also be used to adjust the microphone echo level.

DIRECT ACCESS SONG SEARCH (Karaoke Index)

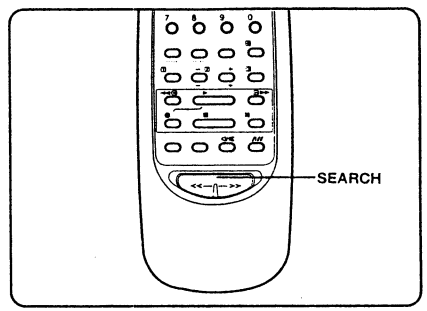
This function gives you direct access to the start of the next tune to be sung by searching for the blank portion between tunes.

During Playback or Stop:

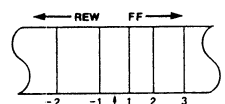
1. Press INDEX SYSTEM so that the KARAOKE INDEX indicator lights.
   - Pressing INDEX SYSTEM switches the Index Search system (KARAOKE or VISS). (For VISS INDEX search, ☞ p.14)
2. Press the right (or left) part of Karaoke Control Centre (labelled INDEX + or –).
   - "INDEX 1" or "INDEX –1" will appear on the recorder's display panel.



(Continued on next page.)



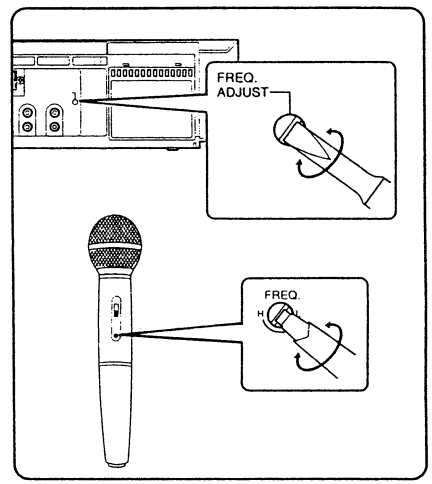
- Specify the number of the song (up to ±99) you want to locate.
  Ex.: To locate the third song from the current position, press INDEX three times.



- The tape will begin playing when the specified song is reached.
- During Stop, you can use the remote control's SEARCH buttons in the same way as the INDEX buttons.

NOTES:

- Only one wireless microphone can be used with this recorder. You cannot use 2 or more wireless microphones.
- The wireless microphone volume and/or echo levels can be adjusted as MIC2.
- Normally, when not using the microphone as wireless, the recorder's WIRELESS MIC button should be off.
- KARAOKE INDEX does not work with a tape which has no signal on its normal soundtrack. Also, if the length of blank parts between tunes is shorter than 4 seconds, if the tune has fade-out ending, or if the tape contains excessive noise signals, KARAOKE INDEX may not work properly with that tape.
- If you wish direct access song search with a tape that has blank parts between tunes shorter than 4 seconds, you can use VISS INDEX search. ☞ p.14



If there is interference when using the microphone

Follow the steps below to re-adjust the frequency of the microphone and your recorder.

Preparation

1. Turn on your TV and recorder.
2. Select the TV's video channel.
3. Select the external input channel by pressing the TV PROG. buttons.
   - "AU" will appear on the recorder's display panel.
4. Press the WIRELESS MIC button on the recorder's front panel.
   - The WIRELESS MIC button will light.
5. Set the microphone's MIC SELECT switch to "WL".

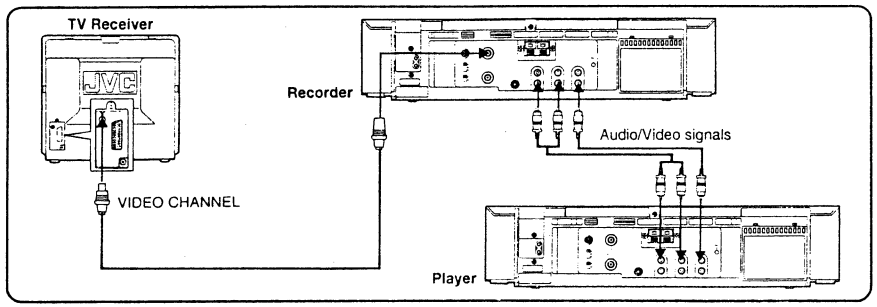
Operation

1. Turn slightly the FREQ.ADJUST screw on the recorder's rear panel in either direction with the provided screwdriver.
2. While speaking into the microphone continuously, turn the microphone's FREQ screw with the provided screwdriver in the same direction as in step 1, until your voice can be clearly heard from the TV's speaker.

Check

1. First set the microphone's MIC SELECT switch to "OFF", and set the switch to "WL".
2. Speak into the microphone and check if your voice can be heard from the TV's speaker.
   - If your voice cannot be heard, try again steps 1 and 2 of "Operation".

Editing



Editing To/From Another Recorder

Preparation

- Connect the player's AUDIO OUT and VIDEO OUT connectors to the recorder's AUDIO IN and VIDEO IN connectors.
- Use the L connector for monaural connection.
- Press your recorder's COLOUR SYSTEM button to select the appropriate colour system. (☞ p.25)

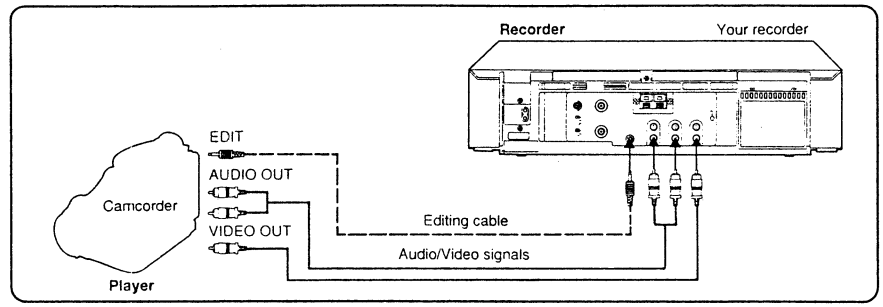
	Player	Recorder
1	Load the source tape.	Load the recording tape.
2		Select the external input mode. With this video recorder, press TV PROG. until "AU" appears on the display panel.
3		Press and hold down the Pause button while you press the Record button to enter the Record-Pause mode.
4	Play back the source tape to search for a scene to be edited.	
5		Start recording where you want to start editing, with this recorder, by pressing the Play button.
6		To stop editing temporarily, press the Pause button.
	Repeat steps 4 through 6 to continue editing.	
7	To stop editing, press the Stop button.	

NOTES:

- NTSC tapes being played back in the NTSC → PAL (PLAYBACK) mode (☞ p.26) cannot be dubbed to another recorder.
- When you use your recorder as the recording deck, select the recording tape speed with the SP/LP/EP button.
- When you dub an NTSC tape using your recorder as the playback deck, select MANUAL NTSC 3.58 (or 4.43) with the COLOUR SYSTEM button. (☞ p.25)

IMPORTANT:

- To edit, both the player and the recorder must be of the same colour system.
- PAL, SECAM and NTSC camcorders can be used as a player for editing.
- For more information on multi-system compatibility, ☞ p. 24.



Editing From A Camcorder

Preparation

- Connect the camcorder's AUDIO OUT and VIDEO OUT connectors to the recorder's AUDIO IN and VIDEO IN connectors.
- Use the L connector for monaural connection.
- Press your recorder's COLOUR SYSTEM button to select the appropriate colour system (☞ p.25).

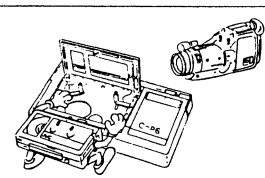
	Camcorder	Recorder
1	Load the source tape.	Load the recording tape.
2		Select the external input mode by pressing TV PROG. until "AU" appears on the display panel.
3		Press and hold down the Pause button while you press the Record button to enter the Record-Pause mode.
4	Play back the source tape to search for a scene to be edited.	
5		Press the Play button where you want to start editing.
6		To stop editing temporarily, press the Pause button.
	Repeat steps 4 through 6 to continue editing.	
7	To stop editing, press the Stop button.	

NOTE:

- If the camcorder is equipped with the Master Edit Control system, you can control the recorder using the camcorder's controls. See the camcorder's instruction manual for operating procedures.

To Watch A Compact VHS Tape

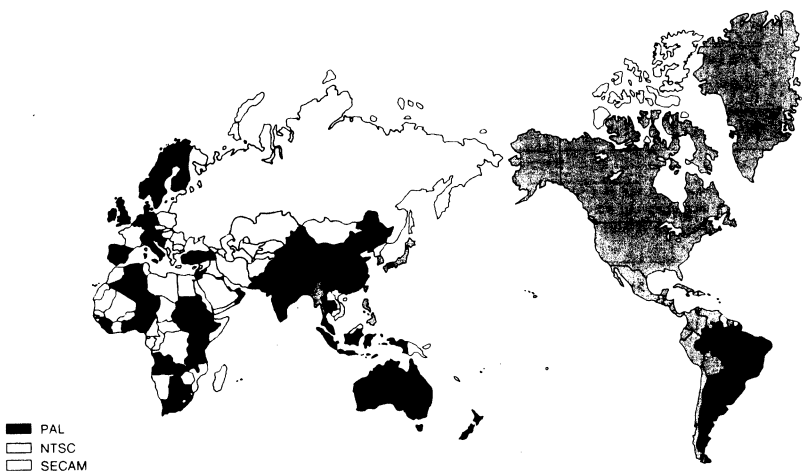
Compact VHS camcorder recordings can be played on your video recorder. Place the recorded cassette into a C-P6 Cassette Adapter and it can be used like any full-sized VHS cassette.



Information On Multi-System Compatibility

World's Colour TV Broadcasting Systems

This recorder incorporates the circuitry necessary to record or play back PAL, SECAM and NTSC signals from most TV broadcasting systems in the world.



Multi-system compatibility

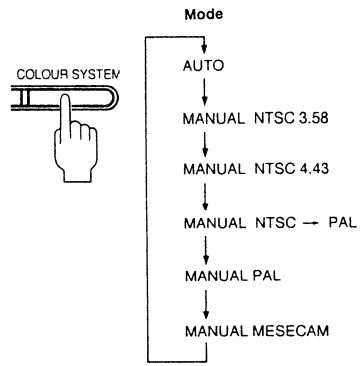
Colour System	PAL			SECAM			NTSC	
Broadcasting System	B/G	D/K	I	B/G	D/K	L*1	M	—
Recording & Reception System	PAL	PAL	PAL	MESECAM	MESECAM	SECAM	NTSC 3.58	NTSC 4.43*2
Major Countries	Germany, Austria, Italy, Kuwait, U.A.E., Singapore, Malaysia, Indonesia, Thailand, India, Australia	China, Mongolia, Rumania	United Kingdom, Hong Kong	Saudi Arabia, Lebanon, Iran, Iraq, Egypt, Morocco, Greece	Ivory Coast, Russia, Bulgaria, Czech Rep., Slovakia, Poland, Hungary	France	U.S.A., Canada, Japan, S. Korea, Taiwan, Philippines, Mexico	—

*1 It is not possible to receive and record SECAM L and NTSC M broadcasts with this recorder.
*2 In the case of NTSC 4.43 recordings, only tape-to-tape dubbing, by using a video cassette recorder capable of playing back NTSC 4.43 recordings, is possible.

PAL, SECAM, MESECAM, And NTSC

- PAL, SECAM and NTSC are three different colour TV systems.
- MESECAM is the designation for tapes with SECAM signals that have been recorded on MESECAM-capable PAL recorders.

Setting Of The Colour System Select Buttons



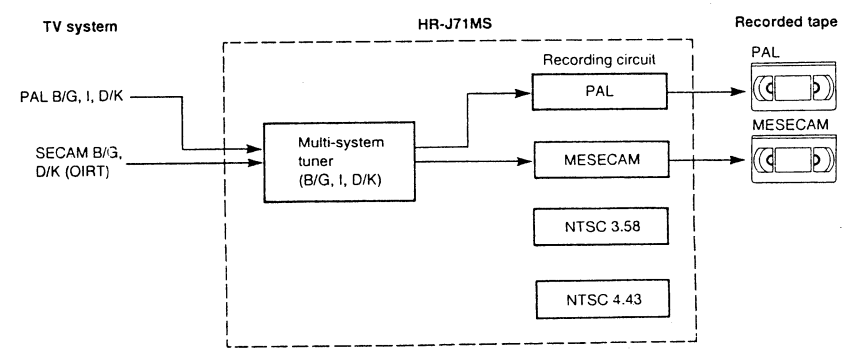
- Use the COLOUR SYSTEM button on the recorder's front panel to select the colour system. Pressing this button changes the mode as illustrated on the left. An indicator on the recorder's display panel will show which mode is selected.

Mode Display	Description
AUTO (Colour Signal)	Usually set to this mode. This mode automatically detects PAL or NTSC and adjusts to the colour system being recorded or played back. When it does not perform properly, set the colour system manually.
MANUAL (Colour Signal)	For recording, there is a choice of 4 selectable modes; PAL/MESECAM/NTSC3.58/NTSC4.43. Select the mode that matches the colour signal being received. For playback, there is an additional mode which allows NTSC tapes to be played back and viewed on PAL TVs.

NOTES:
- In the AUTO mode, NTSC signals will be automatically recorded as NTSC3.58.
- When playing back an NTSC tape in the AUTO mode, the NTSC—PAL(PLAYBACK) mode will be automatically selected.
- When recording a SECAM signal or playing back a MESECAM tape, press the COLOUR SYSTEM button to select "MANUAL MESECAM" on the display panel.

Off-Air Recording

The built-in multi-system tuner is capable of receiving PAL B/G, I and D/K, and SECAM B/G and D/K broadcasts.

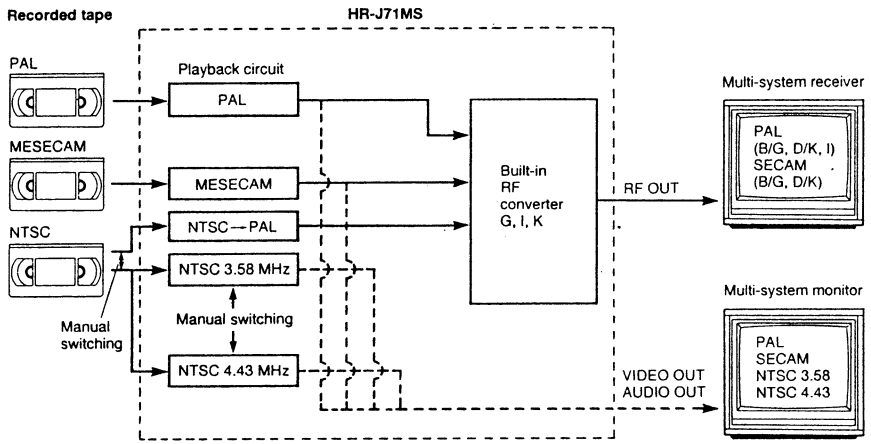


Note: This model does not operate in BRAZIL (PAL-M) or ARGENTINA (PAL-N).

Information On Multi-System Compatibility (Cont'd)

Playback

This recorder can play back all 3 types of recorded tape.



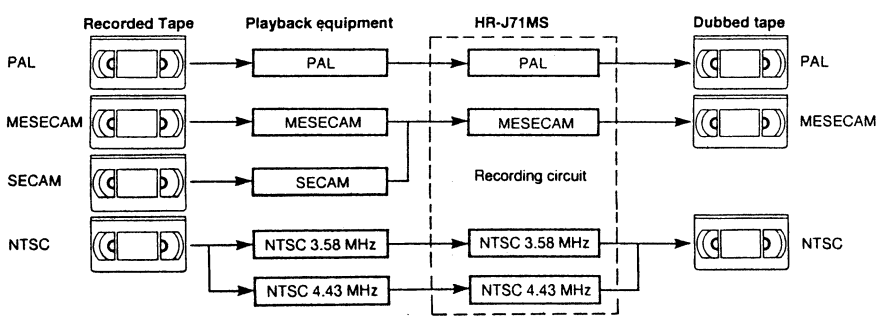
NOTES:

- When viewing NTSC tapes on a PAL TV set:
  - The picture may shrink vertically with black bars appearing at the top and bottom of the screen. This is not a malfunction on the part of the video recorder nor the TV.
  - The picture may roll up or down. This can be corrected using the V-HOLD control found on most TVs. (This cannot be corrected if the TV does not have a V-HOLD control.)
  - During search, still, or frame-by-frame playback, the picture will be distorted, and there may be loss of colour.

ATTENTION:
When this recorder is connected to a multi-system TV, it may happen that no colours appear on the screen if the colour system select switch of the TV is adjusted to the AUTO position. In such a case, change the setting of the colour system select switch of the TV to the position which corresponds to the setting (G, I or D(K)) of the RF converter system select switch on the rear panel of the recorder.

Tape-To-Tape Editing

There are 4 different types of recorded tape, depending on the signal recorded.



Precautions

Please follow these safety precautions. Not doing so may result in damage to the recorder, remote control, or video cassette.

- **Avoid extreme heat and direct sunlight.**
- **Avoid extreme cold.**
- **Avoid extreme humidity.**
- **Avoid dust.**
- **Avoid places subject to vibrations.**
- **Avoid strong magnetic fields.**
- **Do not block the recorder's ventilation openings.**
- **Do not place anything heavy on the recorder or remote control.**
- **Do not place anything which might spill on top of the recorder or remote control.**
- **Do not place the recorder on cushions, pillows, or thick carpeting.**
- **Use the recorder in a stable, horizontal position only.**

When transporting

- Be sure to remove cassette from recorder before packing.
- Avoid violent shocks to the recorder during packing and transport.

Beware of moisture condensation

Moisture in the air will condense on the recorder when you move it from a cold place to a warm place, or under extremely humid conditions — just as water droplets form on the surface of a glass filled with cold liquid. Moisture condensation on the head drum will cause damage to the tape. In conditions where condensation may occur, keep the recorder's power turned on for a few hours to let the moisture dry.

Place cassettes in cassette cases and store vertically.

ATTENTION:
This recorder contains microcomputers. External electronic noise or interference could cause malfunctioning. In such cases, switch the power off and unplug the power cord. Then plug it in again and switch on. Take out the cassette. After checking the cassette, operate the unit as usual.

SECTION 1
DISASSEMBLY

1.1 DISASSEMBLY

1.1.1 Top cover

1.Take Out 4 screws Ⓐ and a screw Ⓑ .
2.To remove the top cover,slide in direction of arrow and lift away.

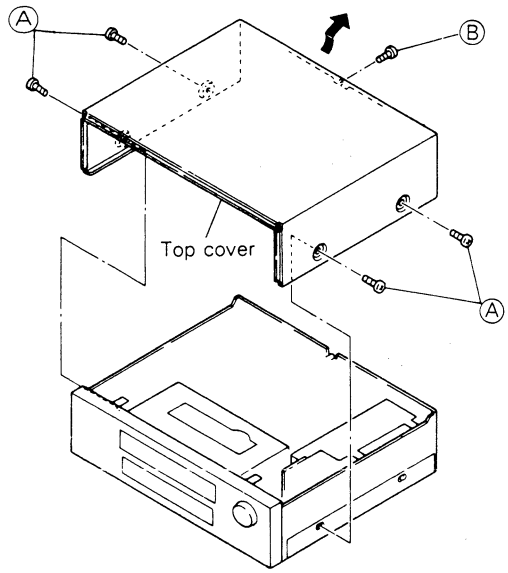


Fig. 1-1-1 Top cover

1.1.2 Front panel assembly

1.Remove the top cover.
2.Carefully disengage 2 tabs ⓐ and 2 tabs ⓓ of the front panel assembly from the upper and both side of the chassis.
3.Pull the front panel assembly toward you to disengage 3 tabs ⓑ of the front panel assembly from the bottom of the chassis then disconnect a connector Ⓒ .
4.Remove the front panel assembly.

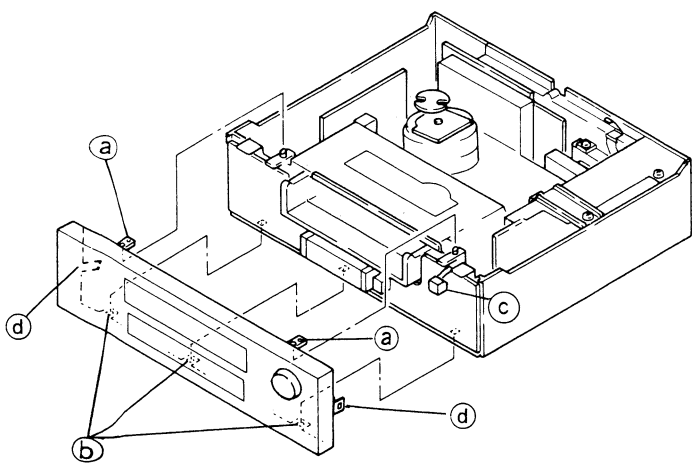


Fig.1-1-2 Front panel assembly

1.1.3 Bottom cover

1.Remove the top cover.
2.Disengage 7 claws ⓐ from the bottom of the chassis.
3.Disengage the bottom cover from the bottom of the chassis.

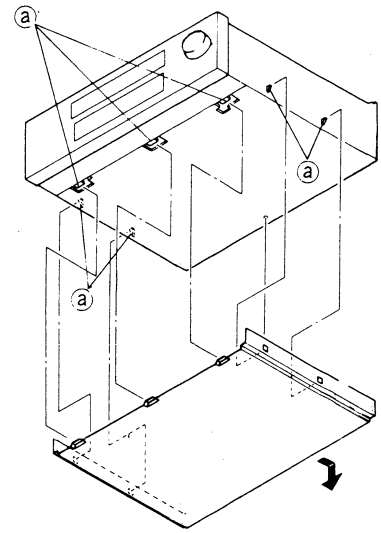


Fig.1-1-3 Bottom cover

1.1.4 FRONT board assembly

1.Remove the top cover and front panel.
2.Disengage 6 claws ⓐ from the chassis.
3.Disengage 5 claws ⓑ,then remove the FRONT board assemby in direction of arrow.

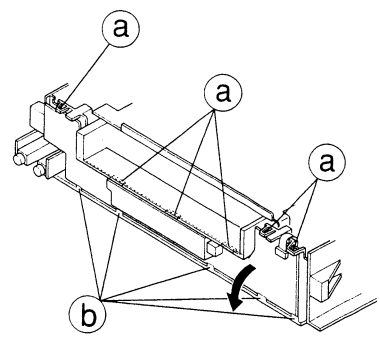


Fig.1-1-4 Front board assembly

1.1.5 SWITCHING REGULATOR board assembly

1. Remove the top cover.
2. Take out 3 screws Ⓒ and a screw Ⓓ, then remove the bracket.
3. Take out a screw Ⓔ.
4. Disengage 2 tabs ⓐ as shown in Fig.1-1-6 and remove the SWITCHING REGULATOR board assembly.

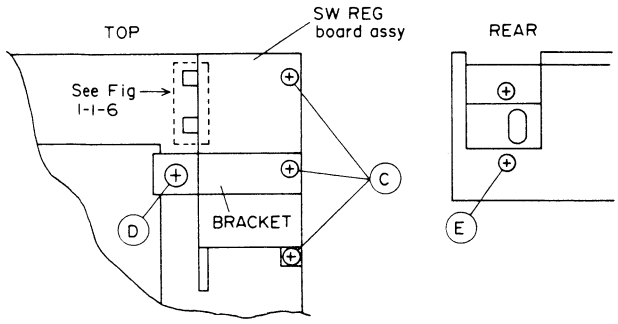


Fig.1-1-5 SWITCHING REGULATOR board assembly-(1)

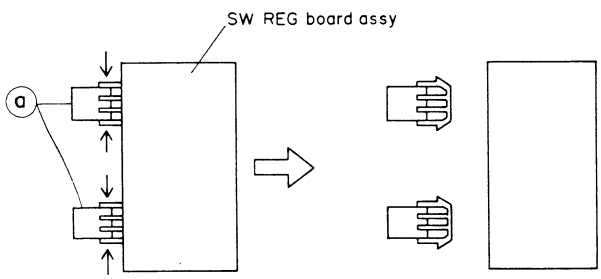


Fig.1-1-6 SWITCHING REGULATOR board assembly-(2)

1.1.6 Cassette housing assembly

1. Remove the top cover and front panel.
2. Take out 4 screws Ⓕ and 2 screws Ⓖ.
3. Disengage 2 claws ⓐ from the holder.
4. Remove the cassette housing assembly in direction of arrow.

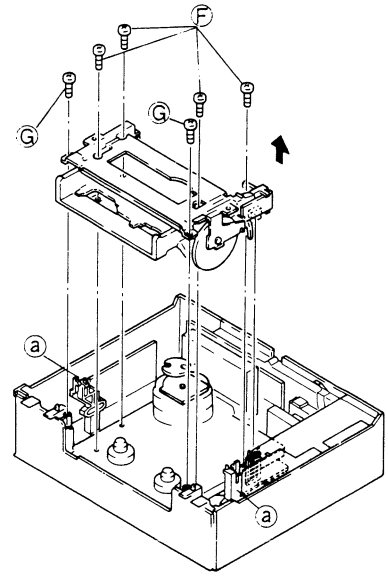


Fig.1-1-7 Cassette housing assembly

1.1.7 PRE/REC board assembly

1. Remove the top cover.
2. Take out 2 screws Ⓗ.
3. Disconnect connector CN502 from the PRE/REC board assembly
4. Remove the PRE/REC board assembly with the shield in the direction of arrow.

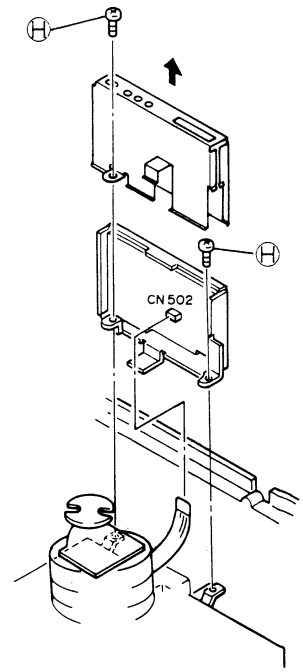


Fig.1-1-8 PRE/REC board assembly

1.1.8 Drum assembly

1. Remove the top cover.
2. Disconnect a connector of stator assembly.
3. Take out 3 screws Ⓙ, and washer then remove the drum assembly and Head Cleaner assy.

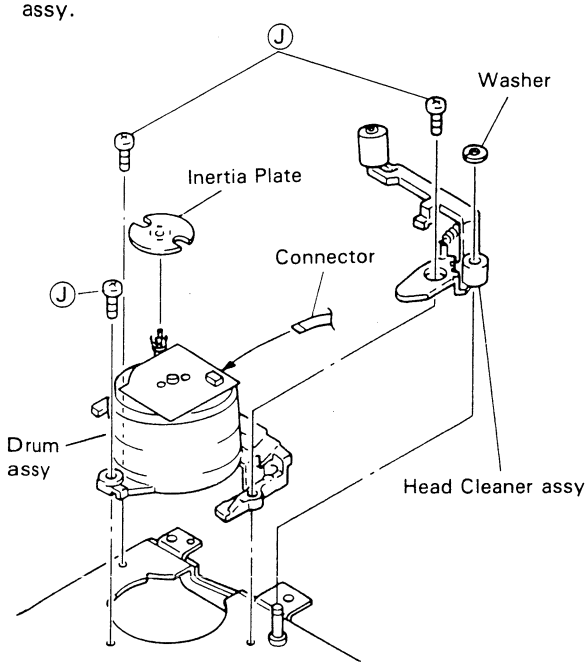


Fig.1-1-9 drum assembly

1.1.9 Main deck assembly

1. Remove the top cover, front panel, and cassette housing assembly.
2. Take out a screw Ⓚ and disconnect 3 connectors ⓐ from the chassis.
3. Remove the main deck assembly in direction of arrow.

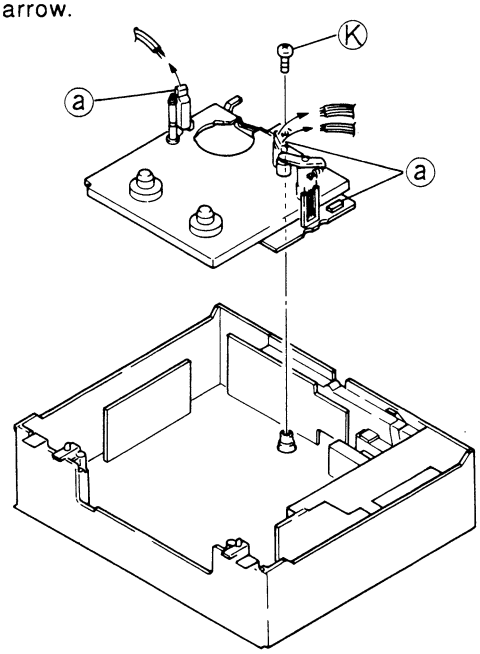


Fig.1-1-10 Main deck assembly

1.1.10 MAIN board assembly

1. Remove the top cover, front panel, SWITCHING REGULATOR, cassette housing and main deck.
2. Take out 1 screws Ⓛ and disengage 2 claws ⓐ from the chassis.
3. Remove the MAIN board assembly in direction of arrow.

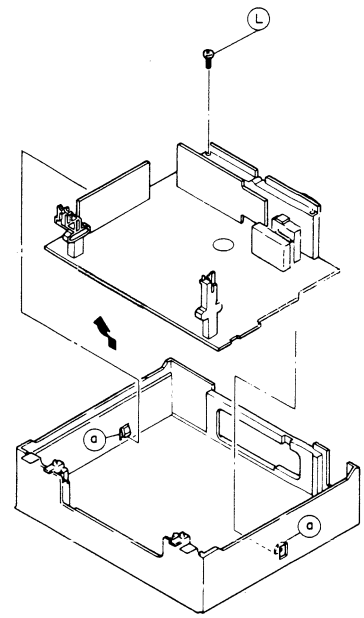


Fig.1-1-11 MAIN board assembly

1.1.11 Cassette housing installation

Note: ***Observe the mechanical phase and position (see figure)when installing the cassette housing assembly. If these are incorrect, the system will not operate properly even when tape is inserted.***

1. Check that the marks of the control cam and pinch roller cam are aligned. If necessary, turn the worm clutch by hand to adjust the position.

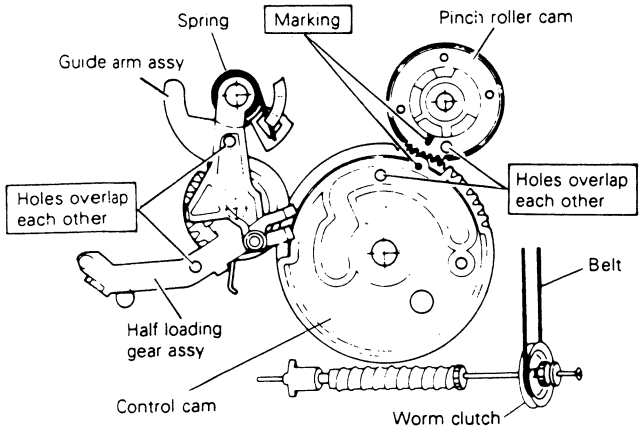
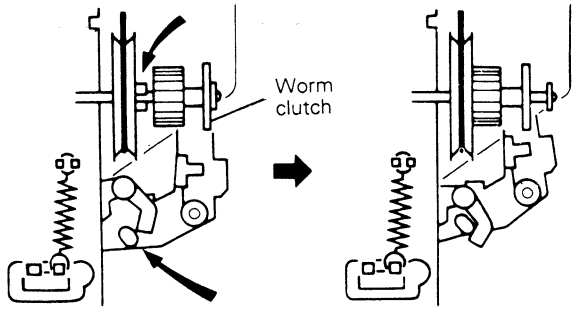


Fig. 1-1-12 Control cam and pinch roller cam position

2. Confirm that the clutch of the worm clutch assembly is locked. If necessary, engage the locked.



Flg. 1-1-13(a) Not locked Fig.1-1-13(b) Lock engaged

3. Install the front panel as shown in Fig. 1-1-12 and re-engage the tabs. Supply power and use spare cassette to check for normal loading and eject operations.

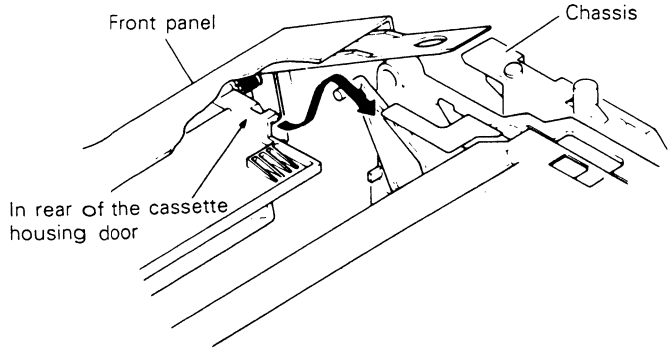


Fig.1-1-14 Cassette housing door

1.2 SERVICE POSITION -1

1. Remove the top cover, front panel and FRONT board assembly.
2. Take out 4 screws Ⓐ and a screw Ⓑ then remove the bracket.
3. Take out 2 screws Ⓒ , a screw Ⓓ and a screw Ⓔ.
4. Disengage 2 claws ⓐ from the chassis.
5. Remove the mechanism assembly(including cassette housing),MAIN board assembly and SWITCHING REGULATOR board assembly out of the chassis as shown in Fig.1-2-2.
6. Turn over the mechanism assembly and MAIN board assembly.
7. Connect the flat wire(CN1) of the FRONT board assembly to the MAIN board assembly.
8. Carry out checks & repairs as necessary as shown in.Fig.1-2-3.

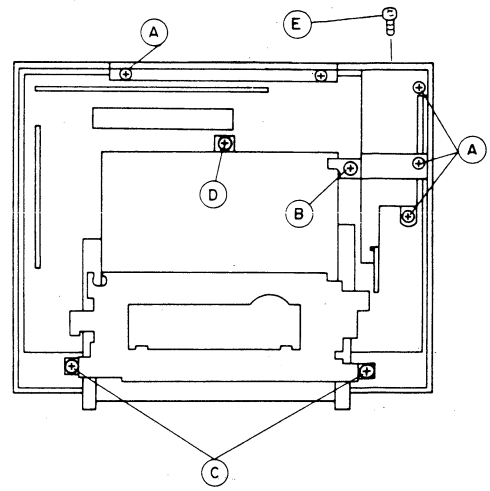


Fig.1-2-1

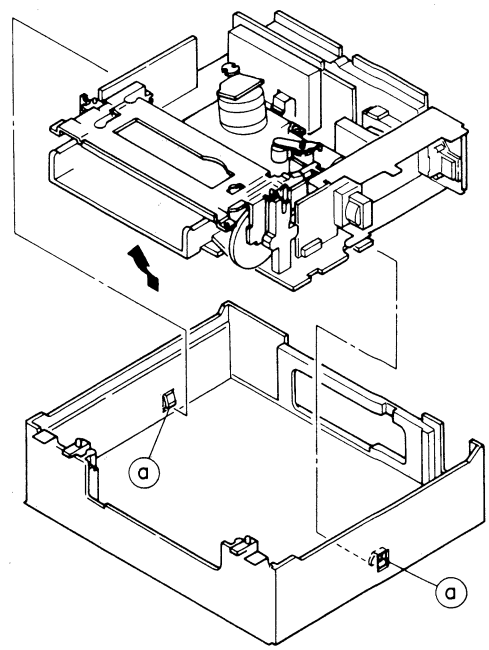
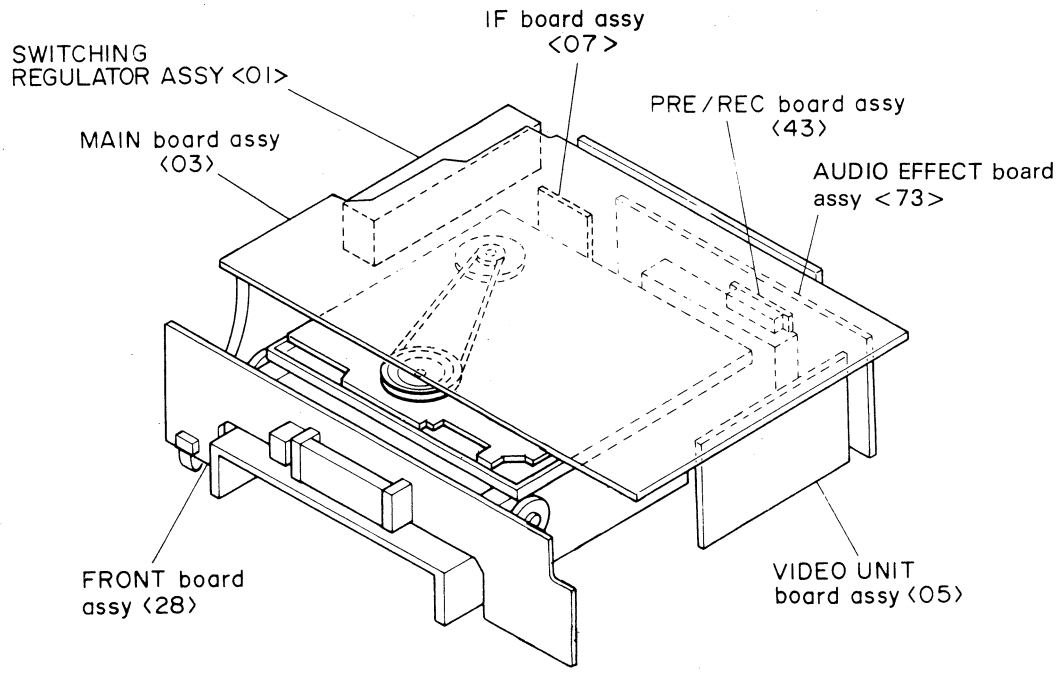


Fig1-2-2



1.3 SERVICE POSITION -2

1.3.1 Connections for MAIN board and SWITCHING REGULATOR board assembly

1. After removing the SWITCHING REGULATOR board assembly from the chassis,connect the patch cord for check and repair as follows.

NO.	CONNECTION				DISCRIPTION	CABLE PART NO.
①	SW.REG board	CN1	←→	MAIN board CN801	Pin 11	PEMCJ0978-111

Table 1-3-1 Patch cord list

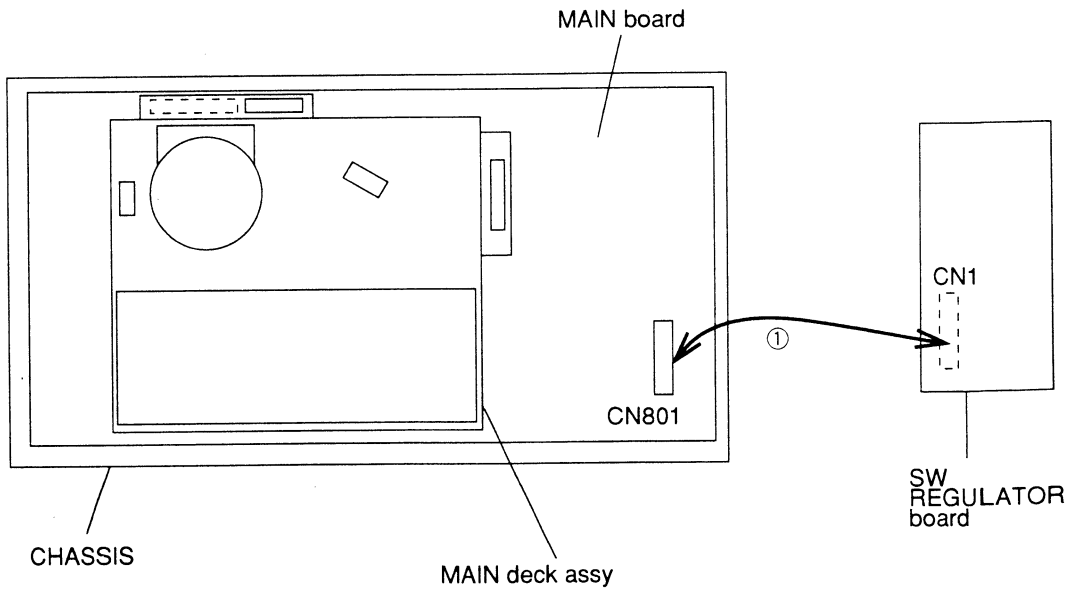


Fig. 1-3-1 Connections for patch cord

SECTION 2
MECHANISM ADJUSTMENT

2.1 PREPARATION

2.1.1 Precautions

1) Disconnect VCR from AC power before soldering.
2) Avoid imparting stress to wires when disengaging connectors.
3) Determine and correct the cause of difficulty before proceeding to adjustments. Do not disturb settings unnecessarily.
4) Use care not to damage tabs, claws, etc. during repairs.
5) Install the cassette housing assembly only when the mechanism is in the Eject or Stop mode position. In the Eject mode, the internal holder of the housing is fully raised. This is fully lowered in the Stop mode.
6) When installing the front panel assembly, be sure to engage the housing door with the door lever of the cassette housing assembly. If this is omitted, the door will not open at Eject and the cassette cannot be removed.
See Sec.1 DISASSEMBLY.

2.1.2 Check without cassette housing

Mechanism operations can be observed easily by removing the cassette housing assembly. Note the following.

1) Disable the photo transistor sensor (END SENSOR) on the main-deck by applying an opaque cover.
2) Connect pins 16 and 17 of Main board connector CN601.
3) Select the desired modes with the operation buttons. However, notice that without tape, setting for the reverse direction modes produces the Stop mode after a few seconds due to absence of the reel sensor output.

2.1.3 Manual removal of loaded tape

In event of failure which leaves the tape in the loaded position, remove it by the following procedure.

1) Take off the top cover and main deck assy in order to wind the tape on the reel.
See Sec.1 DISASSEMBLY.
2) Turn the mode motor belt by hand in the unloading direction to return the loading posts to the stop position, refer Fig. 2-1-1.

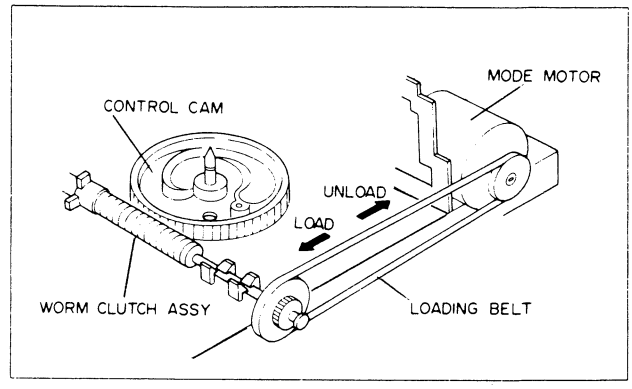


Fig. 2-1-1

3) From the bottom, turn the clutch unit by hand to wind the slackened tape onto the reel.

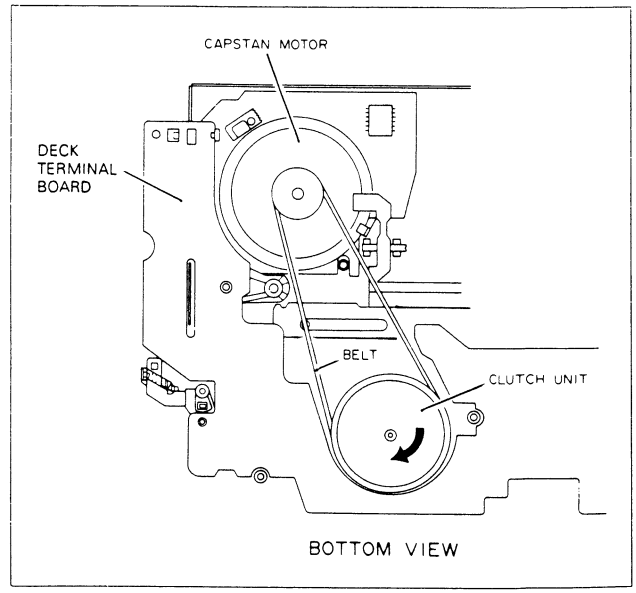


Fig. 2-1-2

4) Turn the mode motor further to where the cassette holder begins moving in the unloading direction, then remove the cassette tape.

Note: *Turn the mode motor and clutch unit alternately in order to avoid damaging the tape. It is important to avoid scratching the tape in the mechanism.*

2.1.4 Test equipment

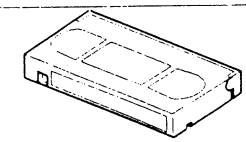
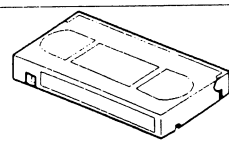
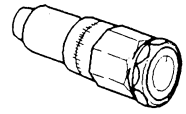
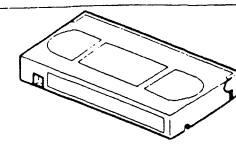
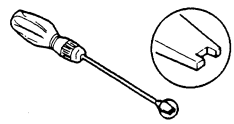
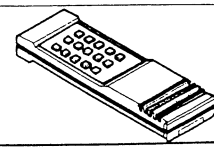
Alignment tape (SP) MH-2	Alignment tape (LP) MH-2L	Torque gauge PUJ48075-2	Back tension cassette gauge PUJ48076-2
			
A/C head positioning tool PTU94010	Roller driver PTU94002	Presetting unit PTU94008	
			

Table 2-1-1

2.2 MAIN MECHANISM PARTS

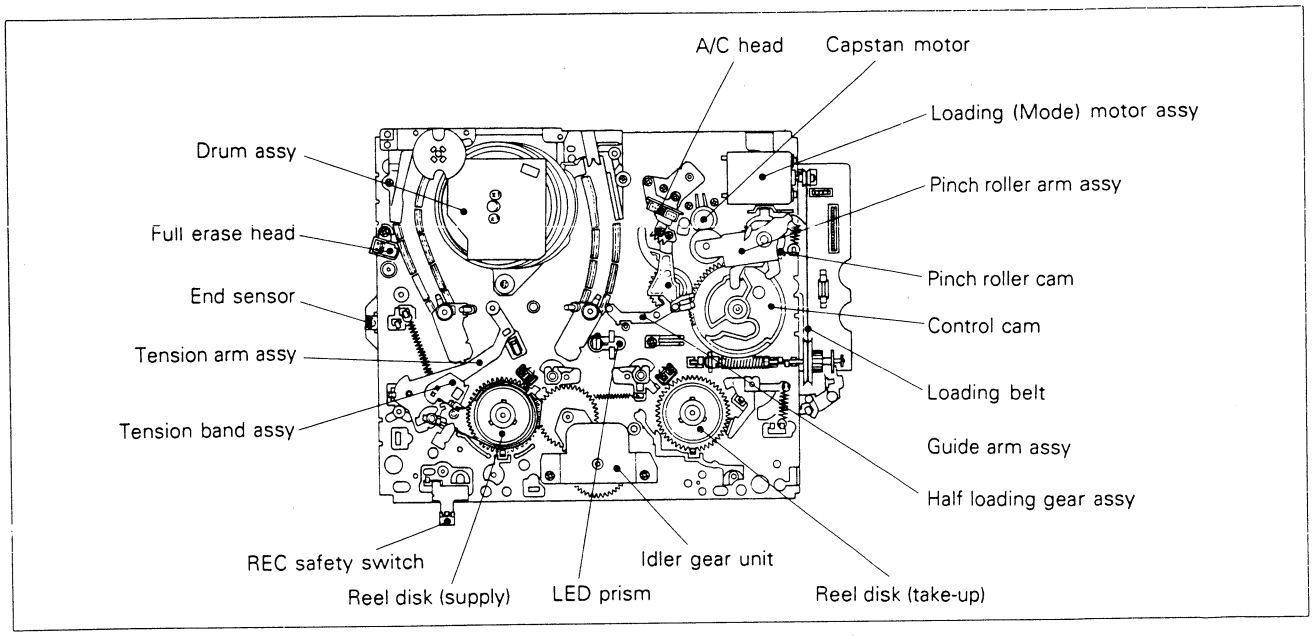


Fig. 2-2-1 Top view of main-deck

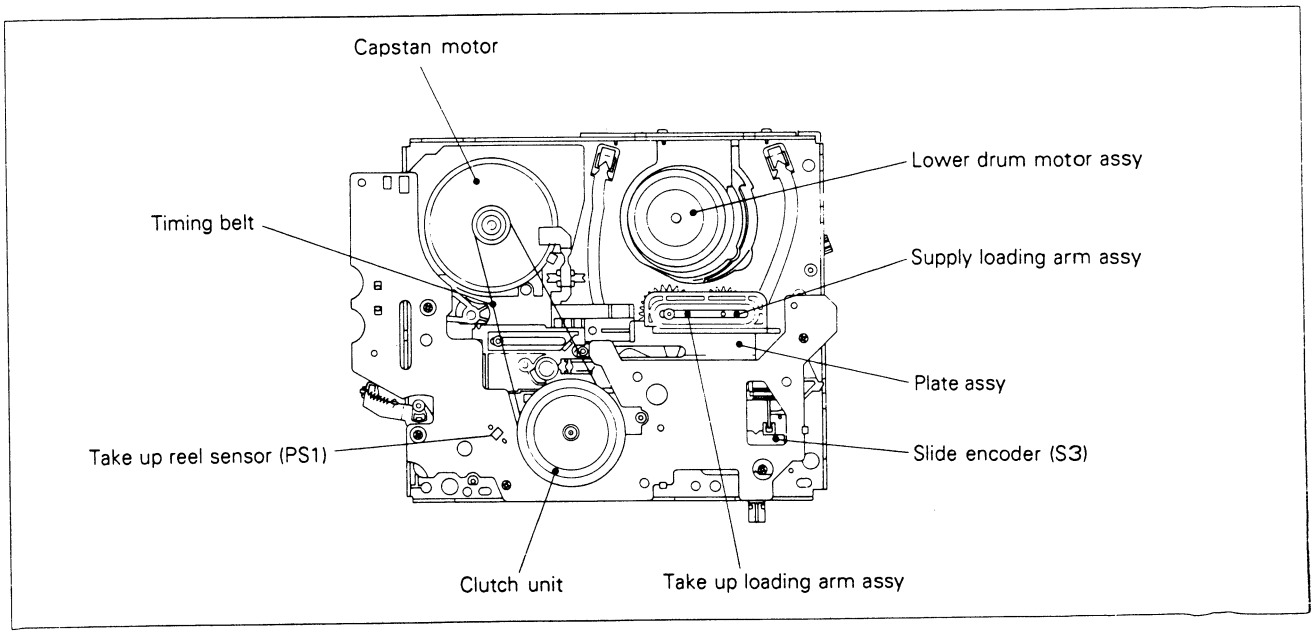


Fig. 2-2-2 Bottom view of main-deck

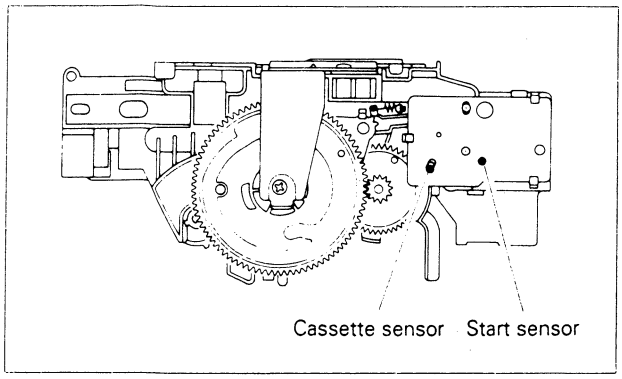


Fig. 2-2-3 Side view of cassette housing

2.2.1 Cleaning

Periodic cleaning of the tape transport system is desirable, but ordinarily not feasible in practice. Therefore, perform cleaning when a set is brought in for repairs or maintenance. Contamination of the video heads, tape guides and brushes can detract from playback picture quality and in extreme cases, even damage the tape. For cleaning, use a fine-mesh cotton cloth (about the texture of a white dress-shirt) moistened in alcohol.

- To clean the video heads, press the moistened cloth gently against the upper drum with fingertip and turn the drum by hand.
- Do not use a vertical stroke, as this may damage the heads.

2.2.2 Lubrication

Oil and grease do not normally require periodic replenshing. Apply only when replacing lubricated parts (also clean and replace lubrication of mating parts if soiled).
For parts and points to apply oil and grease, refer to the exploded views of the mechanism assembly.
Before oiling, clean with alcohol.
Apply one or two drops of oil.
Avoid excess oil.

1) Table 2-2-1 indicates the oil and grease used in this set. Use these or recommended locally available equivalents.

Category	Part No.
Oil	COSMO-HV56
Grease	KANTO-G-31KAV

Table 2-2-1

2) Grease is not required for a replacement cassette housing assembly, as this has been applied at the factory.

Note: *Stir grease that has been stored for an extended period.*

2.3 INSPECTION AND MAINTENANCE

This product employs rotary and moving parts which wear out in the course of usage. Periodic inspection, cleaning, lubrication and maintenance are therefore important for ensuring maximum performance. Worn parts must also be replaced as and when required.

2.3.1 Suggested servicing schedule for main components

The following table indicates the suggested period for such service measures as cleaning, lubrication and replacement. In practice, the indicated periods will vary widely according to environmental and usage conditions. However, the indicated components should be inspected when a set is brought for service and the maintenance work performed if necessary.
Also note that rubber parts may deform in time, even if the set is not used.

System	Parts Name	Operation hours						
		250	500	750	1000	1250	1500	2000
Tape Transport	Upper drum assy	★	★	★	○	★	○	○
	A/C head	★			○			○
	Pinch roller arm assy	★	★	★	★	★	★	★
	Full erase head							
	Tension arm assy							
	Lower drum assy							
	Capstan motor (Shaft)							
	Half loading gear assy							
	Guide arm assy							
Drive	Capstan motor							○
	Loading belt			○				○
	Mode motor assy			○				○
	Reel disk (Supply)			○				○
	Reel disk (Take-up)			○				○
	Clutch assy			○				○
	Worm clutch assy							○
	Plate assy							○
Others	Brush assy			○				○
	Tension band assy			○				○

★ : Cleaning
○ : Inspection or Replacement if necessary

Table 2-3-1

2.4 MAIN PARTS REPLACEMENT AND ADJUSTMENT

2.4.1 Stator assembly

1) Take out 2 screws (A).
2) Raise the Stator Assembly in the direction indicated by the arrow to remove it (also remove the Inertia Roller).
3) Remove the flat cable.
4) To reinstall, first secure the flat cable, then insert 2 screws (A).
5) After reinstalling, be sure to perform switching point adjustment.

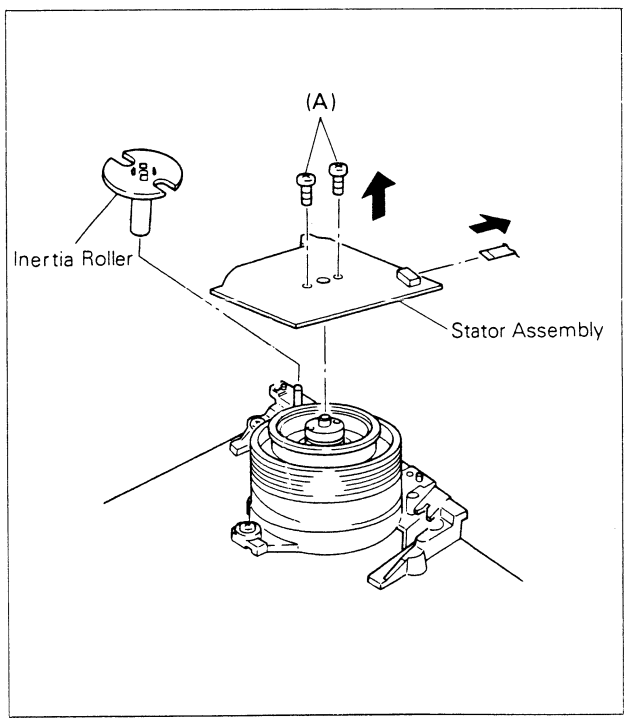


Fig. 2-4-1

2.4.2 Rotor assembly

1) Remove the Stator Assembly.
2) Take out 2 screws (B) and remove the Rotor Assembly.

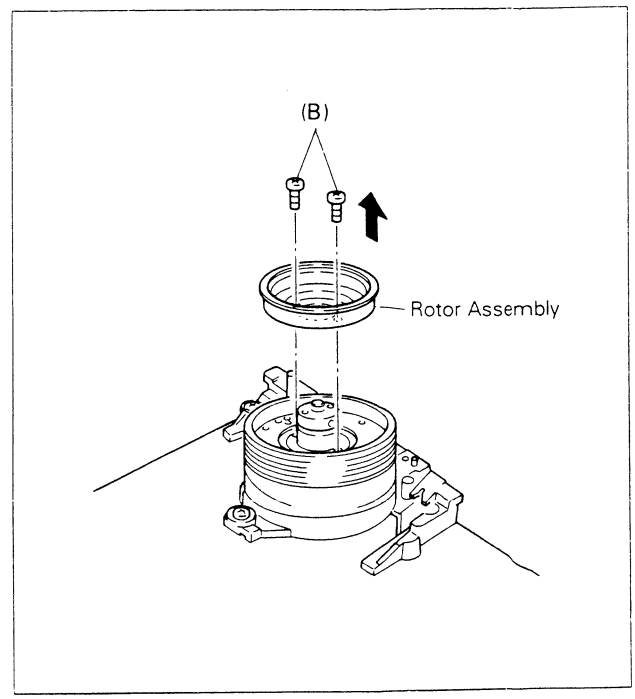


Fig. 2-4-2

Note: *A normal picture will not be obtained unless the phase is properly aligned when installing the Rotor Assembly.*

3) Align the Upper Drum and Rotor Assembly phase as indicated in Fig. 2-4-3.
4) Overlap holes (a) of the Upper Drum with holes (b) of the Rotor Assembly (align holes in 3 locations) and secure with 2 screws (B) (see Fig. 2-4-3).

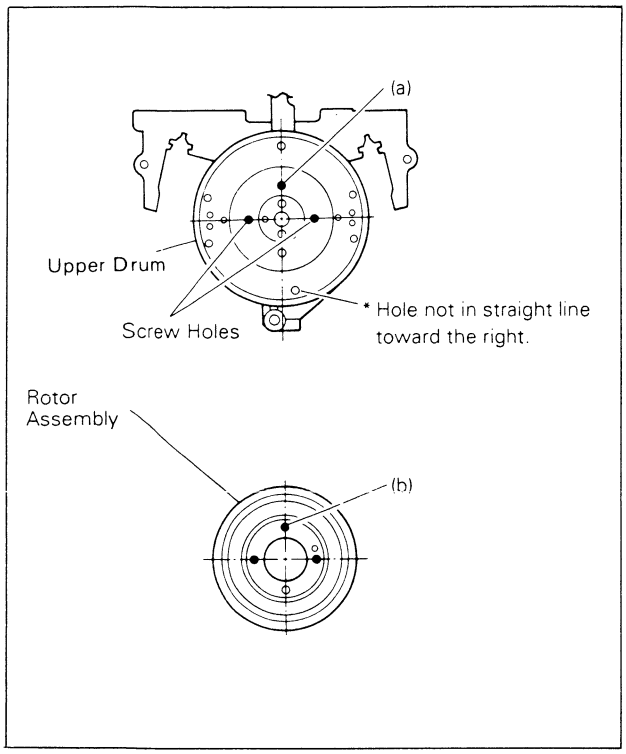


Fig. 2-4-3

2.4.3 Drum subassembly

1) Remove the Washer and Head cleaner Assembly.
2) Disengage the PRE/REC AMP board connector and flat cable.
3) Take out 3 screws (C) and remove the drum Subassembly.

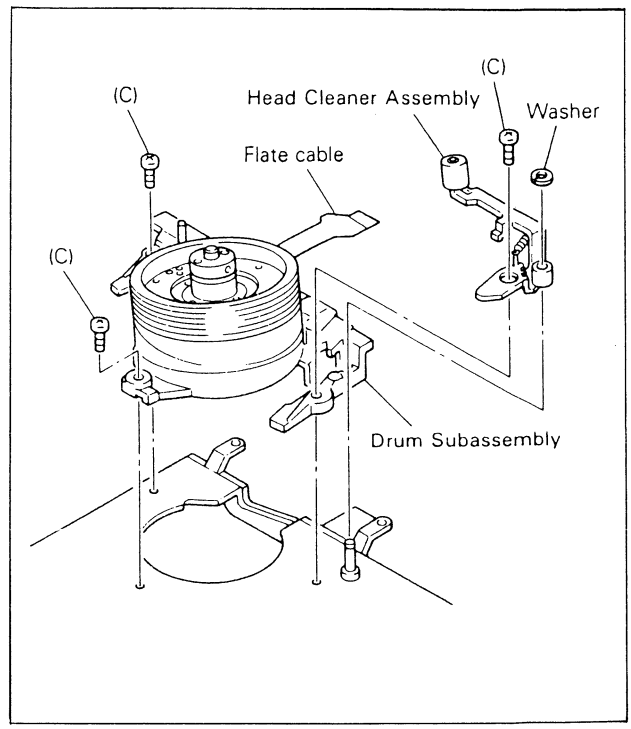


Fig. 2-4-4

2.4.4 Upper Drum assembly

1. Removal

1) Remove the Stator and Rotor Assemblies.
2) Use a 1.5 mm hexagonal wrench to loosen the Collar Assembly screw and remove the Collar Assembly.
3) Remove the Upper Drum Assembly and use tweezers to remove the Washer.

Note: ***If the Brush is replaced, do not apply the grease to the contacts.***

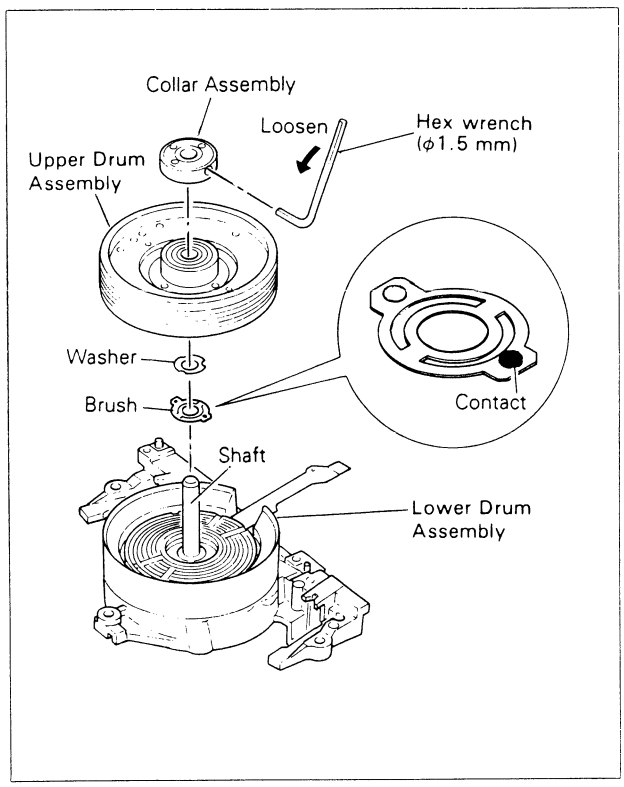


Fig. 2-4-5

2. Installation

1) Use an air brush to clean the Lower Drum Assembly and the coil section of the new Upper Drum Assembly.
2) Set a new Washer on the Drum shaft (see Fig. 2-4-6).

Note: *Be sure to use the new Washer supplied with the replacement Upper Drum Assembly.*

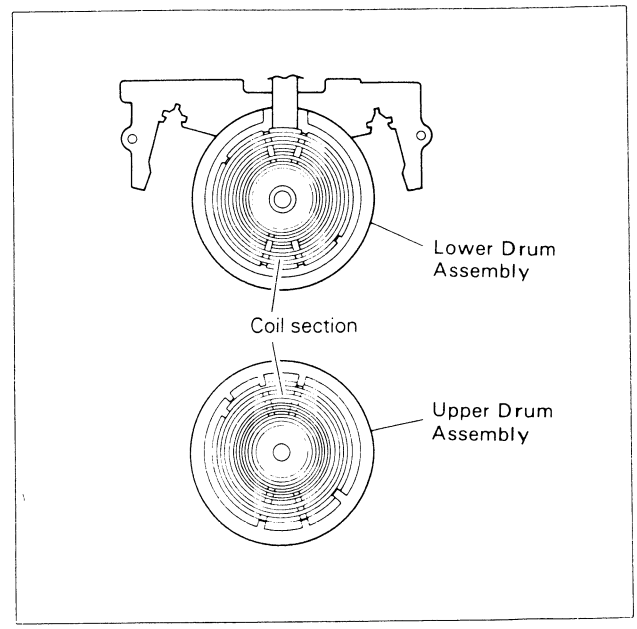


Fig. 2-4-6

3) Note the top and bottom of the Collar Assembly and determine the position as indicated in Fig. 2-4-7.

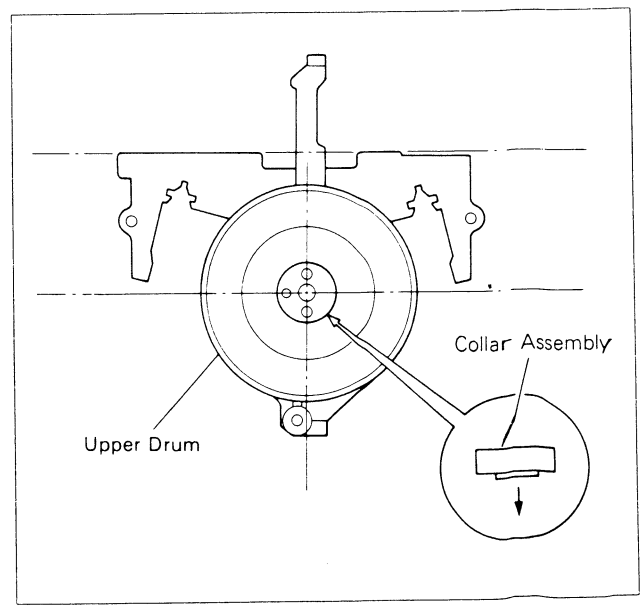


Fig. 2-4-7

4) While pressing the Collar Assembly evenly from above with the fingertips, secure the hexagonal screw.

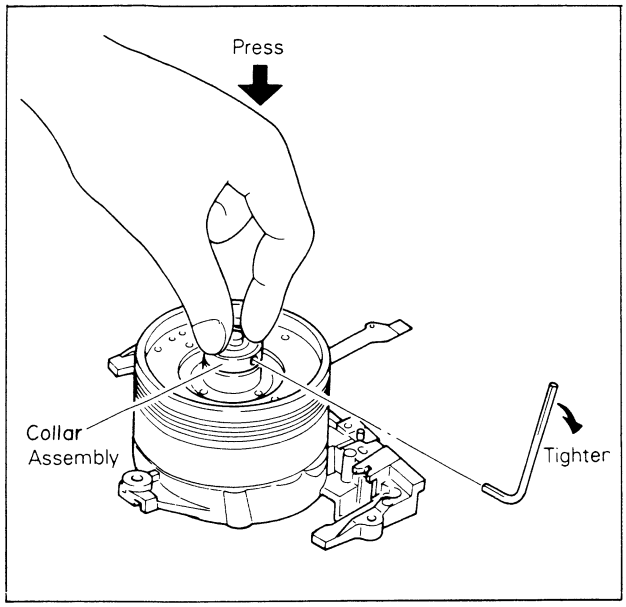


Fig. 2-4-8

5) After installing, gently turn the Upper Drum by hand and confirm normal rotation.
6) Install the Rotor and Stator Assemblies.
7) Clean the Upper and Lower Drum Assemblies and perform the following adjustments;

- Switching Point Adjustment
- Interchangeability Adjustment (be sure to check LP mode)
- Recording color level Adjustment

2.4.5 Tension arm positioning

1) Remove the cassette housing, set the playback mode.
(Refer to 2.1.2 Check without cassette housing)
2) Turn the eccentric adjust pin to position the mark of the chassis with the tension arm tip as shown Fig. 2-4-9.

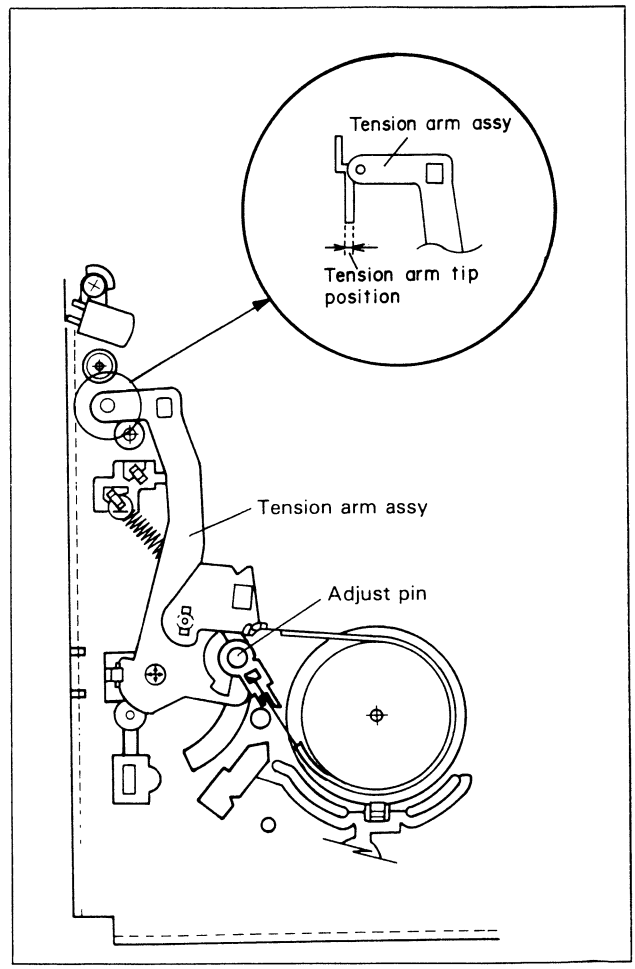


Fig. 2-4-9

Note: *Normally, if the tension post position is properly adjusted, the back tension will assume the correct value. Use the back tension cassette gauge and confirm playback tension is 35 g-cm to 48 g-cm (13.8 g-inch to 18.9 g-inch).*

2.4.6 Pinch roller cam position

1) Set the mechanism to the eject mode (cassette holder is locked in eject position).
2) Install the pinch roller cam so the largest hole near the gear teeth is aligned with the hole on the chassis.
3) Set the control cam on the deck with the hole in the groove aligned with the hole on the chassis. Observe that the small hole on the control cam and the mark on the pinch roller cam are aligned. (If the control cam does not fit readily, shift the loading arm and plate assembly within the range of mechanical play.)
4) Install the half-loading gear assembly with the hole aligned with the hole on the chassis. Secure with split washer.
5) Install the guide arm assembly with the hole aligned with hole on the chassis. Engage the spring properly.

Note: *This is the correct mechanical alignment to install the cassette housing. The cassette housing should also be in the eject position.*

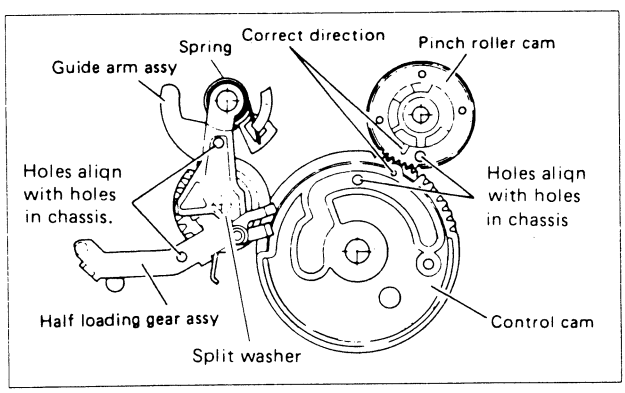


Fig. 2-4-10

2.4.7 Audio/control head height

1) Adjust the 3 screws (screw ①,②,③ in Fig. 2-5-1) to set the audio/control head height to 6.6 mm (0.26 in). Adjust all screws equally.
2) Perform interchangeability adjustments to obtain the specified control pulse and audio signal levels.

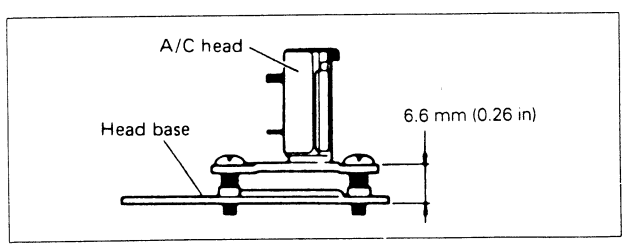


Fig. 2-4-11

Notes:
- *It is very important to correctly adjust the control pulse and audio signal in addition to the mechanical tape path.*
- *Perform interchangeability adjustments after electrical adjustments.*

2.4.8 Loading arm and plate assembly position

1) Set for Eject mode and remove the deck terminal board.
2) Check that the preset hole of the plate assembly is in the preset position. Temporarily insert a 3 mm (0.12 in) screw to hold the position.
3) By hand, hold the loading arms in the unloading (inner) position and set the plate assembly from above.
4) Install Red and White split washers. Remove temporary screw.
5) Move the mode motor belt by hand and confirm mechanism operation.

Note: *Observe that the brake assembly pin is engaged with the plate assembly groove.*

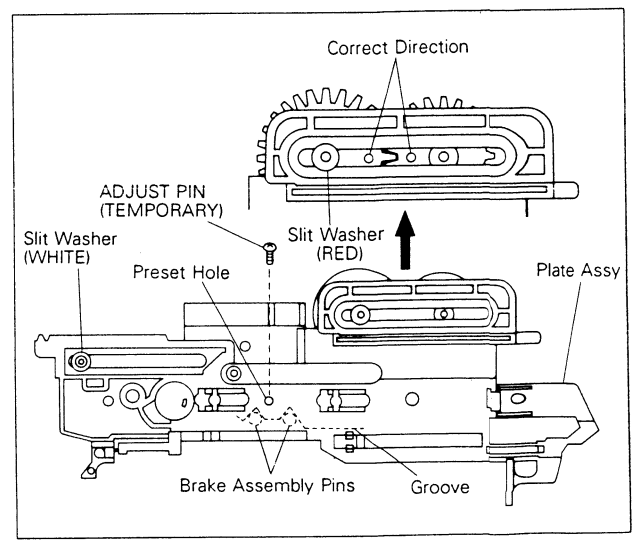


Fig. 2-4-12

2.4.9 Reel disk height

1) Measure the height of the reel disk above the main chassis.
2) Add or remove washers at the bottom of the reel disk to adjust for 12 mm (0.47 in). See Fig. 2-4-13.

Note: *This adjustment is normally not needed. Perform after replacing the reel disk.*

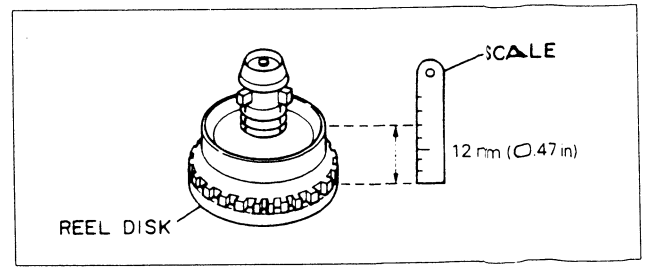


Fig. 2-4-13

2.5 TAPE INTERCHANGEABILITY ADJUSTMENT

Note: *This adjustment is extremely important. However, it is normally not required during routine service. Perform only after replacing major components (A/C head, drum assembly, etc.).*

2.5.1 Height and azimuth adjustment of A/C head

1) Connect the oscilloscope to the audio output jack on the rear of the deck.
2) Play back the stairstep portion (6 kHz, Mono) of the alignment tape.
3) Adjust Black Screw ② on the head base in Fig. 2-5-1 so that the output level is at a maximised.
4) Readjust Screw ① shown in Fig. 2-5-1 for maximum output.

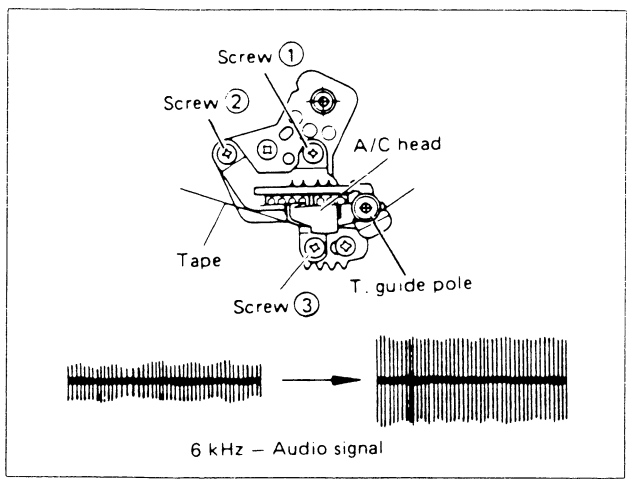


Fig. 2-5-1

2.5.2 Horizontal Position adjustment of A/C head

1) Play back the stairstep portion of the alignment tape.
2) Connect the oscilloscope to TP506 (PB FM) on the PRE/REC AMP board. Use TP511 (DRUM FF) as a trigger. Confirm that the FM envelope appears, as in Fig. 2-5-4.
3) Set the neutral manual tracking position, by simultaneously press of the (+) and (–) tracking buttons.
4) If adjustment is required, slightly loosen screws ④ and ⑤. Set A/C head positioning tool on the A/C head adjusting boss as shown in Fig. 2-5-2.
5) Turn the tool first to position the A/C head fully toward the capstan. Then gradually return it toward the drum and stop at the position of maximum FM waveform output level as shown in Fig. 2-5-4.
6) Tighten screw ⑤. Remove the tool and tighten screw ④.
7) Eject the tape and then re-insert again. Playback the Alignment Tape. Set the neutral manual tracking position. Push the tracking (+) button (count the number of pushes) until the maximum envelope is reduced to 1/2. Eject the tape and re-insert it again. Playback the Alignment Tape. Set the neutral manual tracking position. Push the tracking (–) button (count the number of pushes) until the maximum envelope is reduced to 1/2.
8) Confirm that the number of pushes are equal.

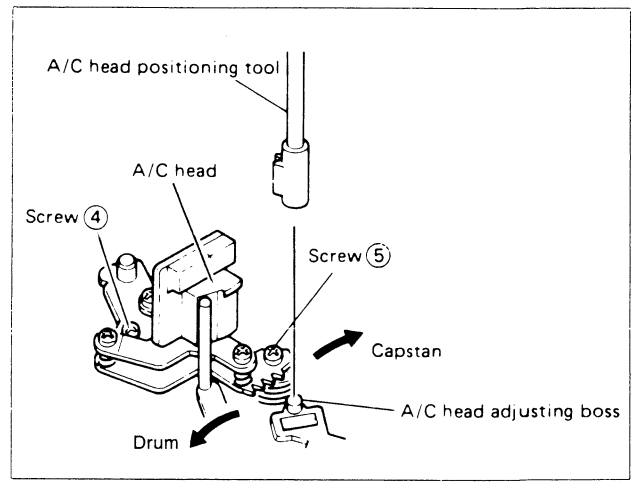


Fig. 2-5-2

2.5.3 Playback tracking

This is the most important adjustment. If incorrect, proper tracking will not be obtained in recording and playback.
Other problems that may occur are noise in parts of the picture, poor color reproduction and picture instability.

1) Play back the stairstep portion of the alignment tape.
2) Connect the oscilloscope to TP506 (PB FM) on the PRE/REC AMP board. Use TP511 (DRUM FF) as a trigger. Confirm that the envelope appears, as in Fig. 2-5-4.
3) Operate the tracking adjustment (press the tracking buttons during playback) and set for maximum playback envelope waveform.
4) If adjustment is required, first slightly loosen the set screw located at the bottom of the guide rollers. Using the guide roller adjustment tool, adjust the supply and take-up guide rollers (refer to Fig. 2-5-3) to obtain the correct waveform. Refer to Fig. 2-5-5.

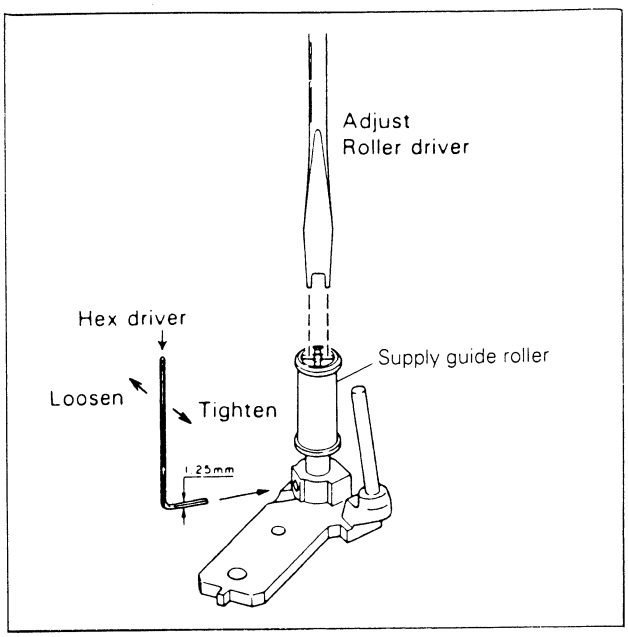


Fig. 2-5-3

5) By pushing the tracking buttons several times, vary the FM waveform output from maximum to minimum (and vice versa) gradually, and confirm that the variation proceeds in a flat shape, as in Fig. 2-5-6.

6) If the FM waveform varies and is not mostly flat, tweak the height of guide roller(s) until the FM waveform is as flat as possible.

7) Eject a tape and then playback tape again, since the height of guide rollers may move during adjustment. Confirm, when pushing the tracking (+) and (-) buttons, FM waveform variation is always flat.

8) After adjustment, confirm that the tape wrinkling does not occur at the roller upper or lower limits, as in Fig. 2-5-7.

9) Perform step 2.5.1 and 2.5.2.

10) Acceptable level difference between channel 1 and 2 is 5db. (See Fig. 2-5-8)

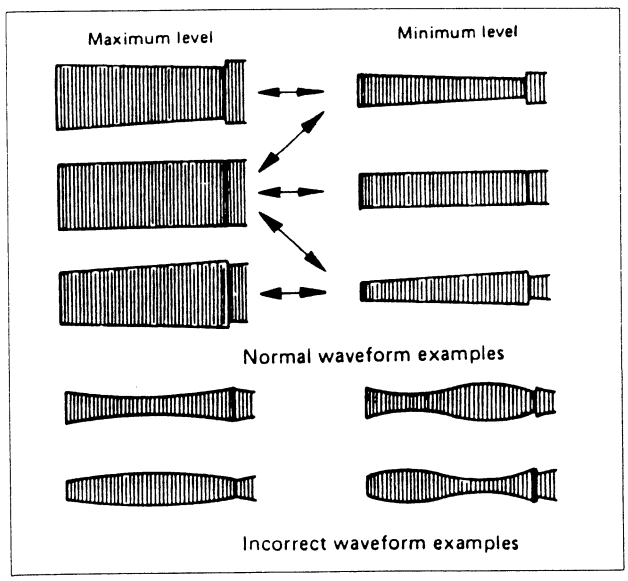


Fig. 2-5-4

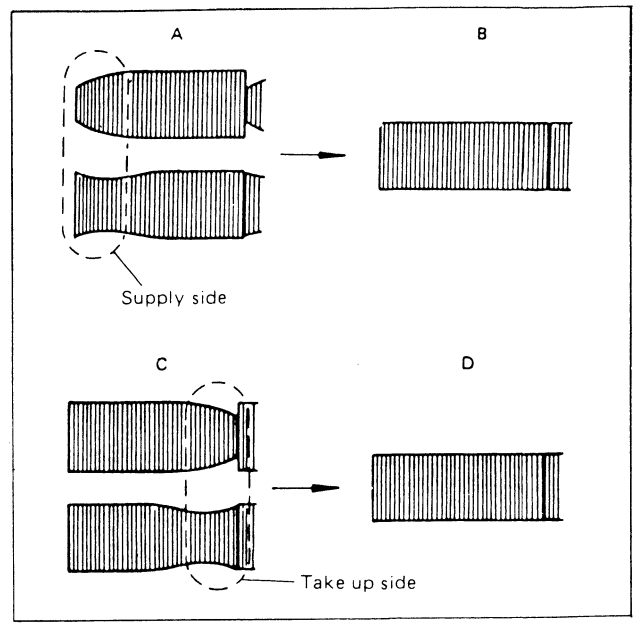


Fig. 2-5-5

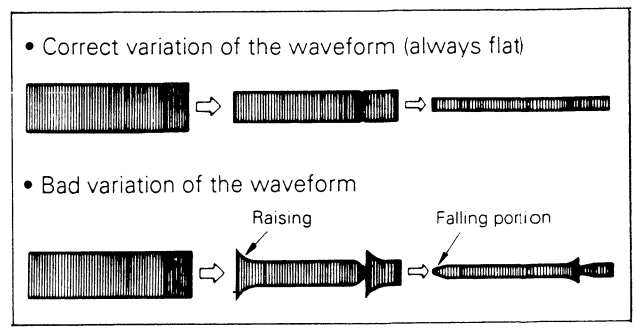


Fig. 2-5-6

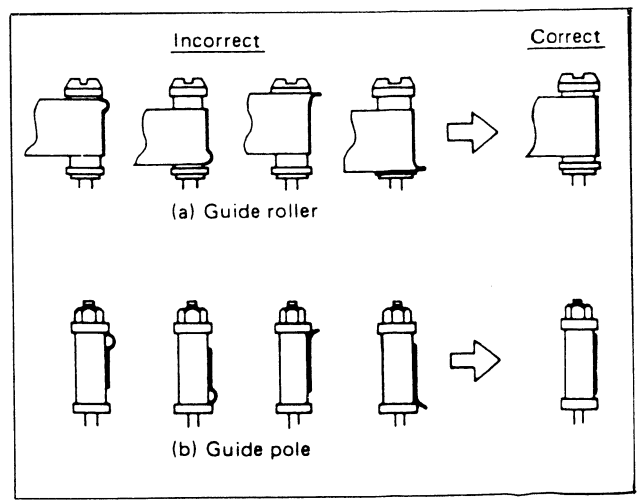


Fig. 2-5-7

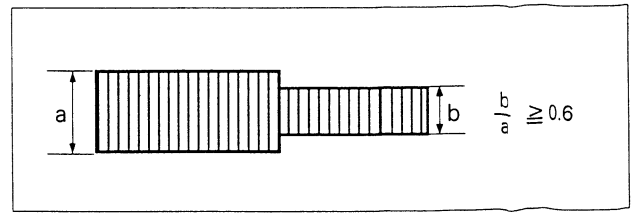


Fig. 2-5-8

SECTION 3
ELECTRICAL ADJUSTMENT

3.1 DECK SECTION ADJUSTMENT

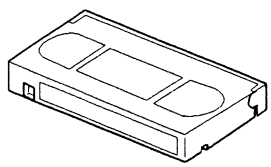
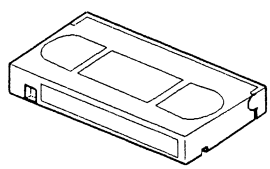
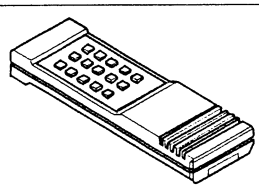
3.1.1 PRECAUTION

Electrical adjustments are required after replacing circuit components and certain mechanical parts. It is important to perform these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipments is available.

1. Required test equipment

1. Colour television or monitor
2. Osciloscope: wide-band, dual-trace, triggered delayed sweep
3. Frequency counter
4. Digital voltmeter
5. Signal generator: RF/IF sweep/maker
6. Signal generator: PAL/NTSC colour bar, stair-step
7. Recording tape

2. Required adjustment tools

Alignment tape (SP) MH-1 : NTSC	Alignment tape (SP) MH-2 : PAL
	
Presetting unit PTU94008	*SMC replacement tools YTU94038C
	

***Note:** It is convenient for replacing chip parts.*

Table 3-1-1 Required adjustment tools

3. Colour bar signal and pattern

- PAL colour bar signal waveform

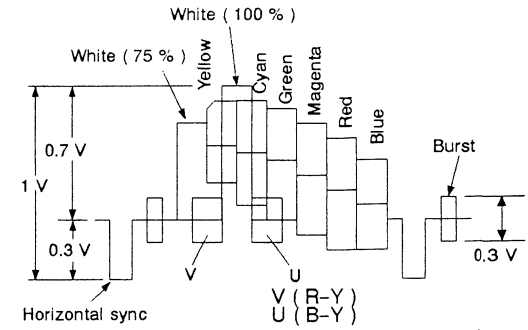


Fig. 3-1-1 PAL Colour bar signal waveform

- PAL colour bar pattern

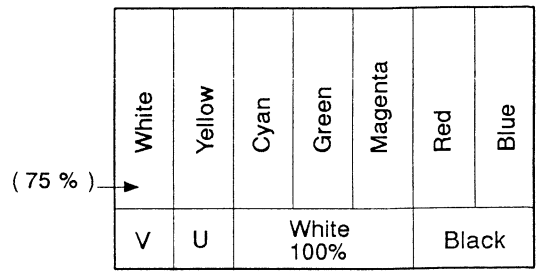


Fig. 3-1-2 PAL colour bar pattern

- NTSC colour bar signal waveform

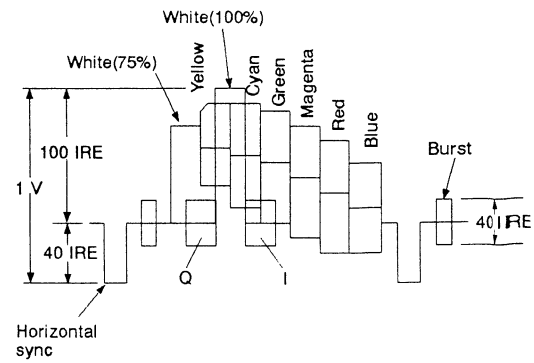


Fig. 3-1-3 NTSC Colour bar signal waveform

- NTSC colour bar pattern

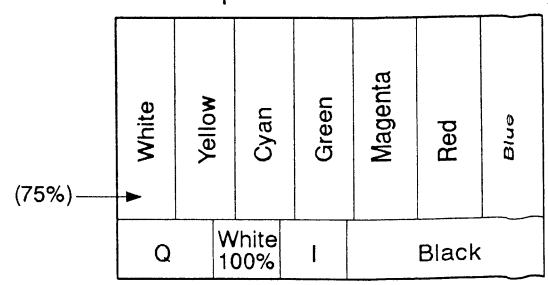


Fig. 3-1-4 NTSC colour bar pattern

3.1.2 SWITCHING REGULATOR CIRCUIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the MAIN BOARD.*

1. 5V DC output voltage

Signal	•TUNER
Mode	•SP •REC
Equipment	•Digital voltmeter
Measurement point	•TP802 (SWD 5V) •TP801 (GND)
Adjustment tool	•R805 (SWD 5V)
Specification	•5.2 ± 0.1 V DC

1) Connect a digital voltmeter to TP802 (SWD 5V) and TP801 (GND).
2) Adjut R805 for 5.2 ± 0.1 V DC.

3.1.3 SERVO CIRCUIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the MAIN BOARD.*

1. PB switching point (PAL)

Signal	•Alignment tape (MH-2) •Stairstep
Mode	•PB (PAL) •Automatic tracking OFF
Equipment	•Oscilloscope
Measurement point	•VIDEO OUT TERMINAL
Trigger slope (-)	•TP411 (DRUM FF)
Adjustment tool	•Presetting unit [PTU94008]
Specification	•6.5 ± 0.5 H

Note: *Use only buttons "E" and "F". Depressing other buttons during adjustment may cause adjustment errors.*

1) Connect an oscilloscope to VIDEO OUT TERMINAL and external trigger from TP411 (negative slope).
2) Playback the stairstep signal of the alignment tape.
3) Set the tracking control to the centre position by simultaneously pressing the TV PROG. (+) and (-) buttons.
4) Adjust by pressing "E" (+) or "F" (-) buttons of presetting unit for position the trigger point 6.5 ± 0.5 H from V.sync.

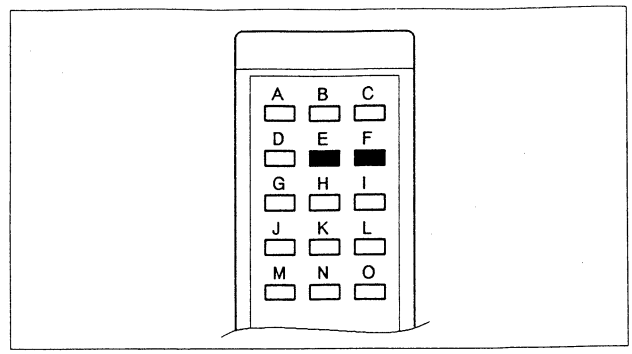


Fig. 3-1-5 Presetting unit (PAL)

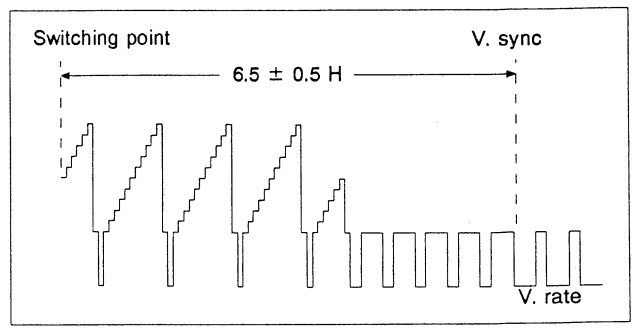


Fig. 3-1-6 PB switching point (PAL)

2. PB switching point (NTSC)

Signal	•Alignment tape (MH-1) •Stairstep
Mode	•PB (NTSC) •Automatic tracking OFF
Equipment	•Oscilloscope
Measurement point	•VIDEO OUT TERMINAL
Trigger slope (-)	•TP411 (DRUM FF)
Adjustment tool	•Presetting unit [PTU94008]
Specification	•6.5 ± 0.5 H

Note: *Use only buttons "E" and "F". Depressing other buttons during adjustment may cause adjustment errors.*

1) Connect an oscilloscope to VIDEO OUT TERMINAL and external trigger from TP411 (negative slope).
2) Playback the stairstep signal of the alignment tape.
3) Set the tracking control to the centre position by simultaneously pressing the TV PROG. (+) and (-) buttons.
4) Adjust by pressing "E" (+) or "F" (-) buttons of the presetting unit for position the trigger point 6.5 ± 0.5 H from V.sync.

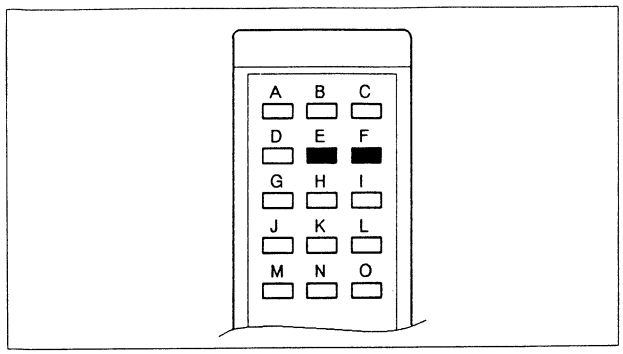


Fig. 3-1-7 Presetting unit (NTSC)

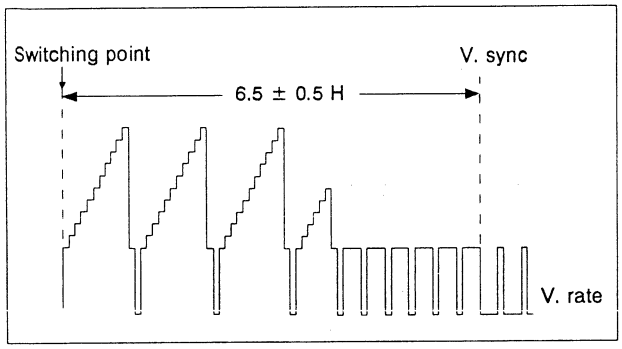


Fig. 3-1-8 PB switching point (NTSC)

3. Slow tracking preset

Signal	•PAL colour bar •NTSC colour bar
Mode	•SP (PAL/NTSC) •LP (PAL) •EP (NTSC) •REC → PB (SLOW) •Automatic tracking OFF •Colour system: AUTO
Equipment	•TV-Monitor
Adjustment tool	•Presetting unit [PTU94008]
Specification	•Mimimum noise

1) Record a PAL colour bar signal in the SP mode.
2) Playback recorded signal on the FWD slow mode.
3) Set the tracking control to the centre position by simultaneously pressing the TV PROG. (+) and (-) buttons.
4) Observe the display on a TV monitor and adjust for optimum noise condition (best tracking) by depressing "C" (+) or "B" (-) buttons of the presetting unit as required.
5) Depress the STOP button.
6) Confirm that the bar noise is not visible on the monitor in the slow mode.
7) Repeat steps 1) to 6) in LP mode.
8) Record a NTSC colour bar singnal, and repeat steps 2) to 6) in SP mode.
9) Record a NTSC colour bar signal, and repeat steps 2) to 6) in EP moed.

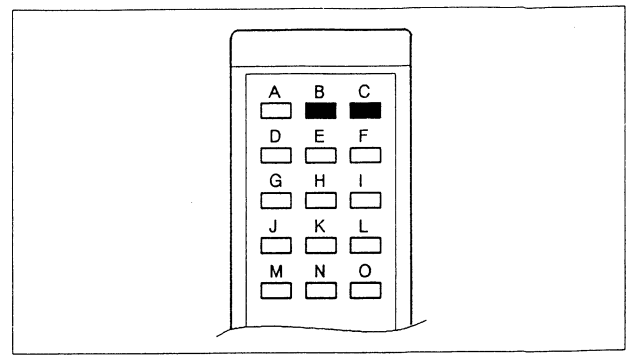


Fig. 3-1-9 Presetting unit

3.1.4 VIDEO CIRCUIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the VIDEO UNIT BOARD.*

Important:

Item 1. thru 6..

1) Ordinarily performing these adjustments is not required. Adjustments should be performed only if IC2 on the VIDEO UNIT BOARD has been replaced.
2) To adjust, replace fixed resistor with variable chip resistor, then adjust as required.

1. EE Y level

Signal	•PAL colour bar
Mode	•EE •Colour system: AUTO
Equipment	•Oscilloscope
Measurement point	•VIDEO OUT TERMINAL
Adjustment part	•R42 (EE Y LEVEL)
Specification	•2.00 ± 0.06 Vp-p (Unterminated)

1) Connect an oscilloscope to VIDEO OUT TERMINAL.
2) Supply a PAL colour bar signal.
3) Confirm that Y level is 2.00 ± 0.06 Vp-p. Unterminated.
4) If necessary, replace R42 with the variable chip resistor NVP1301-153N and adjust it for 2.00 ± 0.06 Vp-p, as in Fig. 3-1-10.

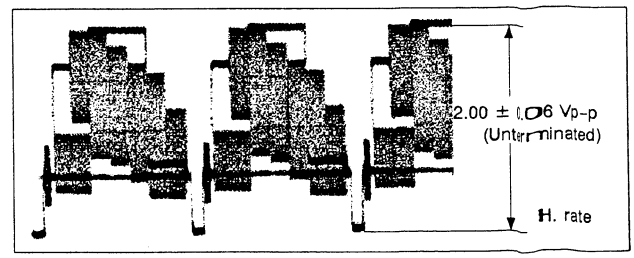


Fig. 3-1-10 EE Y level

2. White clip

Signal	•PAL colour bar
Mode	•EE •Colour system: AUTO
Equipment	•Oscilloscope
Measurement point	•IC2 pin 22
Adjustment part	•R45 (W/D CLIP)
Specification	•WHITE CLIP : 190 ± 4 % •DARK CLIP : 145 ± 8 %

1) Connect an oscilloscope to IC2 pin 22.
2) Confirm that white clip is 190 ± 4 % and dark clip is 145 ± 8 %.
3) If necessary, replace R45 with the variable chip resistor NVP1301-103N and adjust it 190 ± 4 % white clip and 145 ± 8 % dark clip, as in Fig. 3-1-11.

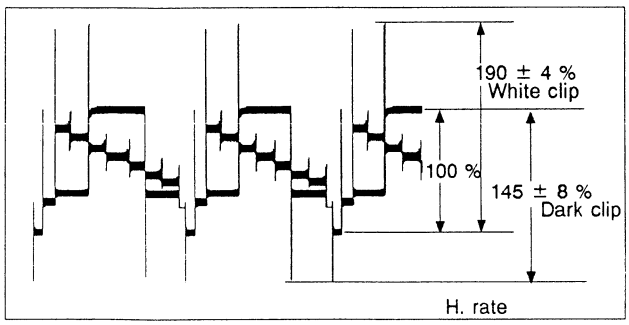


Fig. 3-1-11 White clip

3. Carrier & deviation

· Carrier

Signal	•No signal-VIDEO INPUT (Shorted RCA Phono Plug)
Mode	•EE •Colour system: MANUAL PAL
Equipment	•Frequency counter
Measurement point	•CN2 pin 5
Adjustment part	•R28 (CARRIER)
Specification	•3.80 ± 0.04 MHz

1) Connect the frequency counter to CN2 pin 5.
2) Confirm that frequency is 3.80 MHz ± 0.04 MHz.
3) If necessary, replace R28 with the variable chip resistor NVP1301-223N and adjust it for 3.80 ± 0.04 MHz.

· Deviation

Signal	•PAL colour bar
Mode	•REC → PB •Colour system: MANUAL PAL
Equipment	•Oscilloscope
Measurement point	•VIDEO OUT TERMINAL
Adjustment part	•R29 (DEVIATION)
Specification	•2.00 ± 0.06 Vp-p (Unterminated)

4) Record and playback a PAL colour bar signal.
5) Confirm that Y level is 2.00 ± 0.06 Vp-p unterminated.
6) If necessary, replace R29 with the variable chip resistor NVP1301-103N and adjust it for 2.00 ± 0.06 Vp-p, as in Fig. 3-1-12.

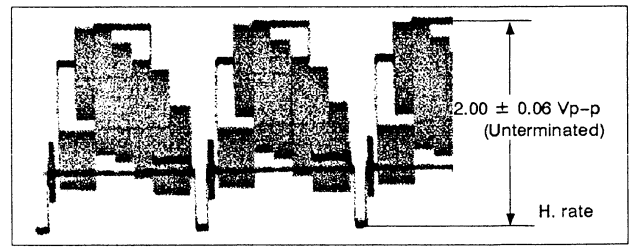


Fig. 3-1-12 Carrier & deviation

4. YNR level

Signal	•PAL colour bar
Mode	•EE •Colour system: AUTO
Equipment	•Oscilloscope
Measurement point	•IC2 pin 9
Adjustment part	•R18 (N.C. BALANCE)
Specification	•Mimimum DC step difference

1) Connect an oscilloscope to IC2 pin 9.
2) Confirm that DC step difference is minimum.
3) If necessary, replace R18 with the variable resistor NVP1301-152N and adjust it for minimum DC step difference, as in Fig. 3-1-13.

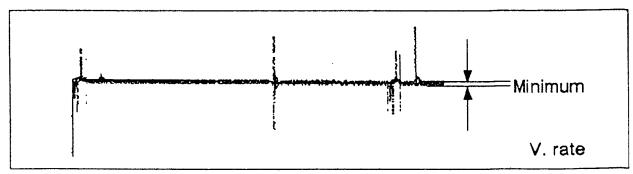


Fig. 3-1-13 YNR level

5. PB Y level

Signal	•PAL colour bar
Mode	•SP •REC → PB •Colour system: AUTO
Equipment	•Oscilloscope
Measurement point	•VIDEO OUT TERMINAL
Adjustment part	•R25 (PB Y LEVEL)
Specification	•2.00 ± 0.06 Vp-p (Unterminated)

Note: *Confirm that procedure 3.1.4-2. is correct before performing this adjustment procedure.*

1) Connect an oscilloscope to VIDEO OUT TERMINAL.
2) Record and playbck a PAL colour bar signal.
3) Confirm that Y level is 2.00 ± 0.06 Vp-p unterminated.
4) If necessary, replace R25 with the variable resistor NVP1301-472N and adjust it for 2.00 ± 0.06 Vp-p, as in Fig. 3-1-14.

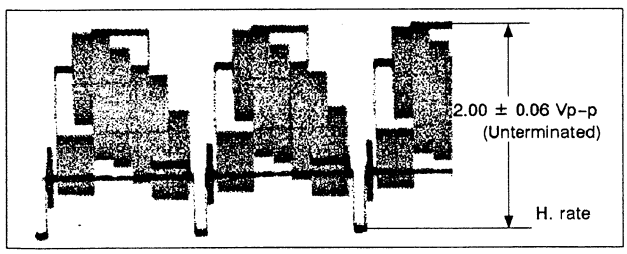


Fig. 3-1-14 PB Y level

6. REC colour level

Signal	•PAL colour bar
Mode	•SP •REC •Colour system: AUTO
Equipment	•Oscilloscope
Measurement point	•CN2 pin 11 (REC COLOUR)
Adjustment part	•R52 (REC COLOUR LEVEL)
Specification	•200 ± 10 mVp-p

1) Connect an oscilloscope to CN2 pin 11.
2) Record a PAL colour bar signal in SP mode.
3) Confirm that colour level is 200 ± 10 mVp-p, as in Fig. 3-1-15.
4) If necessary, replace R52 with the variable resistor NVP1301-222N and adjust it for 200 ± 10 mVp-p.

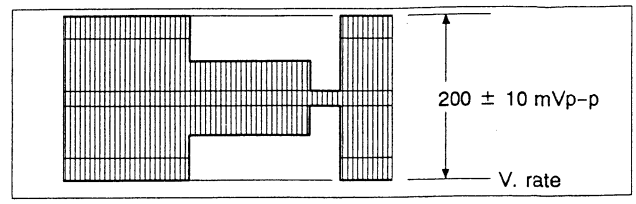


Fig. 3-1-15 REC colour level

3.1.5 TIMER CIRCUIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the MAIN BOARD.*

1. Timer clock

Signal	•No signal
Mode	•EE •AUX
Equipment	•Frequency counter
Measurement point	•IC601 pin 64
Adjustment part	•C614 (TIMER CLOCK)
Specification	•1024.008 ± 0.001 Hz (976.5597 ± 0.0010 µsec)

1) Connect the frequency counter to IC601 pin 64 and GND.
2) Connect the short wire between IC601 pin 33 and IC601 pin 63.
3) Short the leads of capacitor C616 once in order to reset IC601.
4) Disconnect the short wire then connect it quickly again.
5) Adjust C614 for 1024.008 ± 0.001 Hz (976.5579 ± 0.0010 µsec).
6) Disconnect the short wire.

3.1.6 AUDIO CIRCUIT (HR-J71MS only)

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the AUDIO UNIT BOARD.*

Important:

Item 1. thru 3..

1) Ordinarily performing these adjustments is not required. Adjustments should be performed only if IC1 on the AUDIO UNIT BOARD has been replaced.
2) To adjust, replace fixed resistor with variable chip resistor, then adjust as required.

1. Carrier frequency adjustment (NTSC)

Signal	•No signal
Mode	•EE •Clour sytem: MANUAL NTSC
Equipment	•Frequency counter
Measurement point	•IC1 pin 21 •IC1 pin 43
Adjustment part	•R11 (L CARRIER NTSC) •R25 (R CARRIER NTSC)
Specification	•1.300 ± 0.005 MHz : R11 •1.700 ± 0.005 MHz : R25

1) Connect the frequency counter to IC1 pin 21 and GND.
2) Confirm that frequency is 1.300 ± 0.005 MHz.
3) If necessary, replace R11 with the variable resistor NVP1301-153NZ and adjust it for 1.300 ± 0.005 MHz.
4) Connect the frequency counter to IC1 pin 43 and GND.
5) Confirm that frequency is 1.700 ± 0.005 MHz.
6) If necessary, replace R25 with the variable resistor NVP1301-332NU and adjust it for 1.700 ± 0.005 MHz.

2. Carrier frequency adjstment (PAL)

Signal	•No signal
Mode	•EE •Colour syste: MANUAL PAL
Equipment	•Frequency counter
Measurement point	•IC1 pin 21 •IC1 pin 43
Adjustment part	•R61 (L CARRIER PAL) •R60 (R CARRIER PAL)
Specification	•1.400 ± 0.008 MHz : R61 •1.800 ± 0.008 MHz : R60

1) Connect the frequency counter to IC1 pin 21 and GND.
2) Confirm that frequency is 1.400 ± 0.008 MHz.
3) If necessary, replace R61 with the variable resistor NVP1301-153NZ and adjust it for 1.400 ± 0.008 MHz.
4) Connect the frequency counter to IC1 pin 43 and GND.
5) Confirm that frequency is 1.800 ± 0.008 MHz.
6) If necessary, replace R60 with the variable resistor NVP1301-153NZ and adjust it for 1.800 ± 0.008 MHz.

3. Hi-Fi playback audio level

Signal	•Audio 1 kHz (-8 dBs)
Mode	•REC → PB
Equipment	•Audio oscillator •AC millivoltmeter
Measurement point	•Audio out (L ch) •Audio out (R ch)
Adjustment part	•R5 (L DEVIATION) •R30 (R DEVIATION)
Specification	•-6 dBs (1.1 Vp-p, 0.39 Vrms)

1) Connect an audio oscillator to audio input (left channel).
2) Record and playback an audio signal.
3) Confirm that output level is -6 dBs (1.1 Vp-p, 0.39 Vrms).
4) If necessary, replace R5 with the variable resistor NVP1301-473NU and adjust it for -6 dBs (1.1 Vp-p, 0.39 Vrms).
5) Connect an audio oscillator to audio input (right channel).
6) Record and playback an audio signal.
7) Confirm that out put level is -6 dBs (1.1 Vp-p, 0.39 Vrms).
8) If necessary, replace R30 with the variable resistor NVP1301-473NU and adjust it for -6 dBs (1.1 Vp-p, 0.39 Vrms).

3.1.7 TUNER CIRCUIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the IF BOARD.*

Equipment required

1. IF sweep signal generator
   (with suitable markers, PIF, SIF, etc.)
2. Sweep signal supply cable (See Fig. 3-1-16)

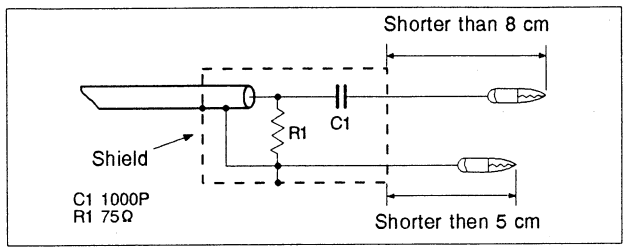


Fig. 3-1-16 Sweeper probe

1. VCO

〈**Factory Method**〉

Signal	•Sweep generator output
Mode	•Tuner (without antenna input Signal)
Equipment	•Oscilloscope •IF sweep signal generator
Sweeper probe	•Sweep signal supply cable
Measurement point	•IC1 pin 17
Adjustment part	•T3 (VCO)
Specification	•38.0 MHz (no distorton)

1) Use a sweeper probe as shown in Fig. 3-1-16 and connect the sweep generator output to IC1 pin 6.
2) Adjust the sweep gain so that the waveform does not distort as observed with the oscilloscope.
3) Connect an oscilloscope to IC1 pin 17 (VIDEO DET OUT) and adjust T3 to align the waveform with the frequency marker as shown in Fig. 3-1-17.

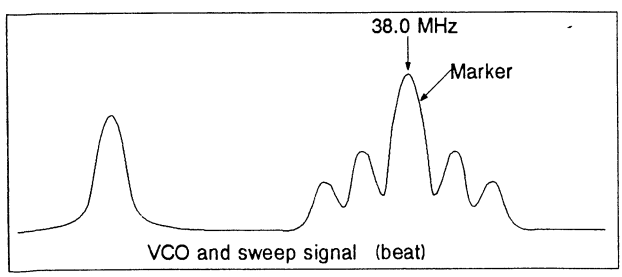


Fig. 3-1-17 VCO

《**Alternate Method**》

Signal	•TV broadcasting
Mode	•Tuner
Equipment	•Monitor-TV
Other condition	•Same as Factory Method
Specification	•Fine picture

1) Receive a colour broadcasting.
2) Adjust T3 to obtain a fine picture on the monitor.

Note: *Before the following adjustments;*
1) Connect a cable to ANT IN and terminate TV OUT with 75 ohms.
2) Set a TV channel signal generator as follows.
Video: 65 dBμ 75 Ω, colour bar 87.5 % modulation.
Audio: 55 dBμ 75 Ω, 1 kHz ± 50 kHz deviation.

2. RF AGC

〈**Factory Method**〉

Signal	•TV broadcasting
Mode	•Tuner
Equipment	•Oscilloscope •TV signal generator
Measurement point	•IF terminal of front end
Adjustment part	•R30 (RF AGC)
Specification	• -6 ± 0.5 dB from maximum level (with minimum noise)

1) Connect an oscilloscope to IF terminal of U/V Tuner (front end) .
2) Adjust R30 for maximum level, then adjust R30 to reduce the -6.0 dB from maximum level.

《**Alternate Method**》

Signal	•TV broadcasting
Mode	•Tuner
Equipment	•TV-monitor
Other condition	•Same as Factory Method
Specification	•Noise just disappears

Note: *Adjust R30 (RF AGC) to correct for excess noise in the picture or when streaks cross interference occurs due to strong electrical fields.*

1) Adjust R30 to minimize noise or streaks on the TV screen.
2) Adjust for noisy picture with strong signal. Then adjust until noise just disappears. Select other channels to confirm proper pick-up of channels.

3. SOUND DET.

〈**Factory Method**〉

Signal	•TV broadcasting
Mode	•Tuner •AFC NORM by MENU
Equipment	•Distortion meter
Measurement point	•JP2 pin 7
Adjustment part	•T1 (FM DET)
Specification	•Minimum distortion

1) Use a adjustment circuit as shown in Fig.3-1-18 and with AFC mode to NORM.
2) Connect the distortion meter to pin 7 of JP2 and observe audio signal.
3) Adjust T1 so that the distortion becomes minimum (less than 1.5 %).

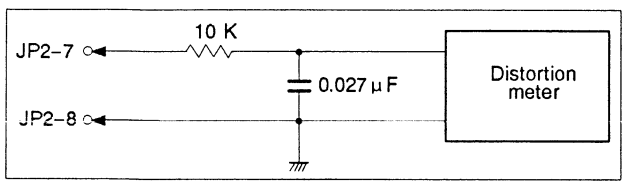


Fig. 3-1-18 Adjustment circuit

《**Alternate Method**》

Signal	•TV broadcasting
Mode	•Tuner
Equipment	•Oscilloscope
Other condition	•Same as Factory Method
Specification	•Maximum level

1) Receive a colour broadcasting on a VHF channel , and connect an oscilloscope to pin 7 of JP2.
2) Adjust T1 for maximum level at audio sound.

4. AFC

Signal	•TV broadcast
Mode	•Tuner •AFC NORM by MENU
Equipment	•Oscilloscope
Measurement point	•JP2 pin 3
Adjustment part	•T2 (AFC)
Specification	•5.0 ± 0.1 V DC

1) Receive a colour broadcast.
2) With AFC mode to NORM connect an oscilloscope to pin 3 of JP2.
3) Set the oscilloscope to DC mode and adjust T2 to set the lower edge of the ripple waveform to 5.0 V DC.

3.1.8 AUDIO EFFECT CIRCUIT

Note: •***Unless otherwise specified, all measurement points and adjustment parts are located on the AUDIO EFFECT BOARD.***
•***R7 is users adjustment volume. Please refer to EN-21 of INSTRUCTIONS.***

1. AFC

Signal	•Wireless Mic
Mode	•KARAOKE
Equipment	•Digital voltmeter
Measurement point	•TP2 round (AFC)
Adjustment part	•L2 (AFC)
Specification	•4.90 ± 0.05 V DC

1) Connect a digital voltmeter to TP2 round and GND.
2) Set the VCR to KARAOKE mode, then use the wireless microphone.
3) Adjust L2 for 4.90 ± 0.05 V DC.

SECTION 4
CHARTS AND DIAGRAMS

SCHEMATIC DIAGRAM NOTES

Safety precautions
The Components identified by the symbol ⚠ are critical for safety. For continued safety, replace safety critical components only with manufactures recommended parts.

1. Schematic diagram values

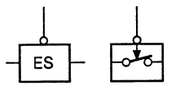
Unless otherwise specified.

1) All resistance values are in ohms. 1/6 W, 1/8 W (refer to parts list).
   Chip resistors are 1/16 W.
   K: KΩ (1000Ω), M: MΩ (1000KΩ)
2) All capacitance values are in μF, (P: PF).
3) All inductance values in μH, (m: mH).
4) All diodes are 1SS133 or MA165, (refer to parts list).

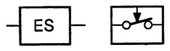
2. Indications

AUX : Active only at high.

$\overline{AUX}$: Active only at low.

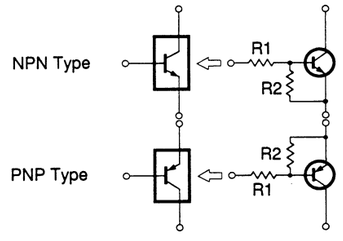


Active only at low for electronic switch.

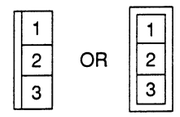


Active only at high for electronic switch.

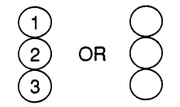
Digital transistor :
The digital transistor includes built in resistors.
It features small size and high reliability.



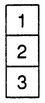
3. Interpreting Connector indications



Removable connector



Direct connection on board

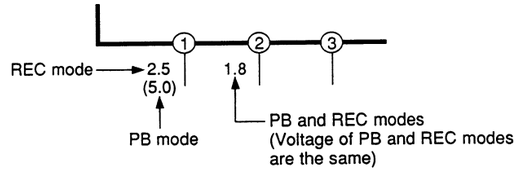


Non-removable Board connector

Connected pattern on board

4. Voltage measurement

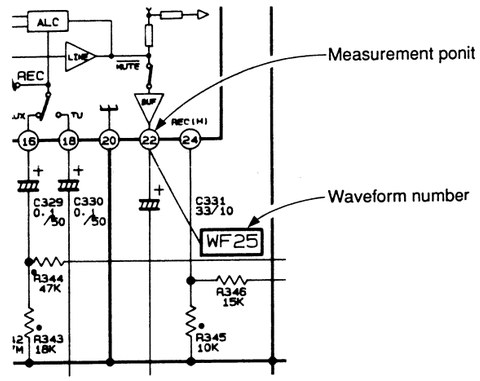
1) Video circuits
   REC: Colour bar signal in SP mode, normal VHS mode.
   PB : Alignment tape, colour bar SP mode, normal VHS mode.
   — : Unmeasurable or unnecessary to measure.
2) Audio circuits
   REC: 1KHz, –8 dBs sine wave signal in SP mode, Normal VHS mode.
   PB : REC then playback it.
3) Movie Camera circuits
   Measured using a correctly illuminated grey scale or colour bar test charts in the E-E mode.
4) Indication on schematic diagram
   Voltage Indications for REC and PB modes on the schematic diagram are as shown below.



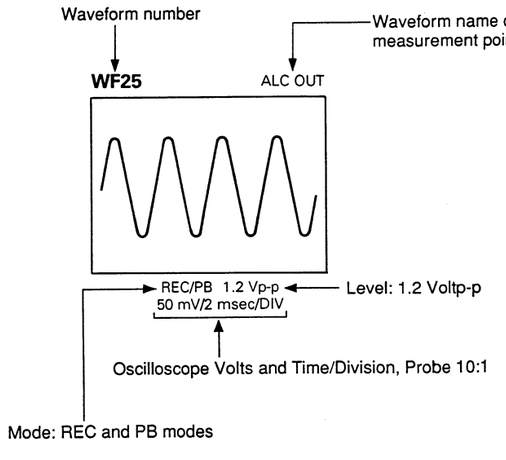
Note: If do not indicate for voltage measurement on the schematic diagram, refer to the voltage charts.

5. Waveform measurement

1) Video circuits
   REC: Colour bar signal in SP mode, normal VHS mode.
   PB : Alignment tape, colour bar SP mode, normal VHS mode.
2) Audio circuits
   REC: 1KHz, –8 dBs sine wave signal in SP mode, normal VHS mode.
   PB : REC then playback it.
3) Movie Camera circuits
   Measured using a correctly illuminated grey scale or colour bar test charts in the E-E mode.
4) Indication on schematic diagram
   Waveform indications on the schematic diagram are as shown below.



5) Waveform indications



6. Signal path Symbols

The arrows indicate the signal path as follows.

- Playback signal path
- Playback and recording signal path
- Recording signal path (including E-E signal path)
- Y signal path
- Colour (Chroma) signal path
- R or R-Y signal path
- B or B-Y signal path
- Capstan servo path
- Drum servo path
- Reel servo path

CIRCUIT BOARD NOTES

1. Colour indications

1) Foil side :
   Foil side patterns are indicated at GREY shading.
2) Component side :
   Component side patterns are indicated at RED shading.

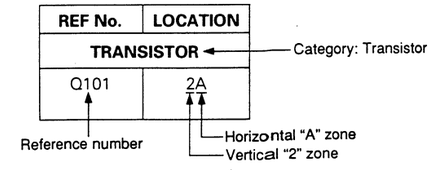
2. Foil and Component sides

1) Foil side (B side) :
   Parts on the foil side seen from foil face (pattern face) are indicated.
2) Component side (A side) :
   Parts on the component side seen from component face (parts face) are indicated.

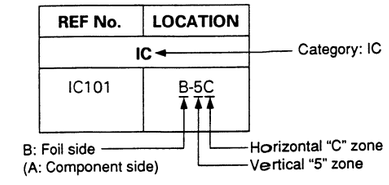
3. Parts location guides

Parts location are indicated by guide scale on the circuit board.

1) Signal pattern :



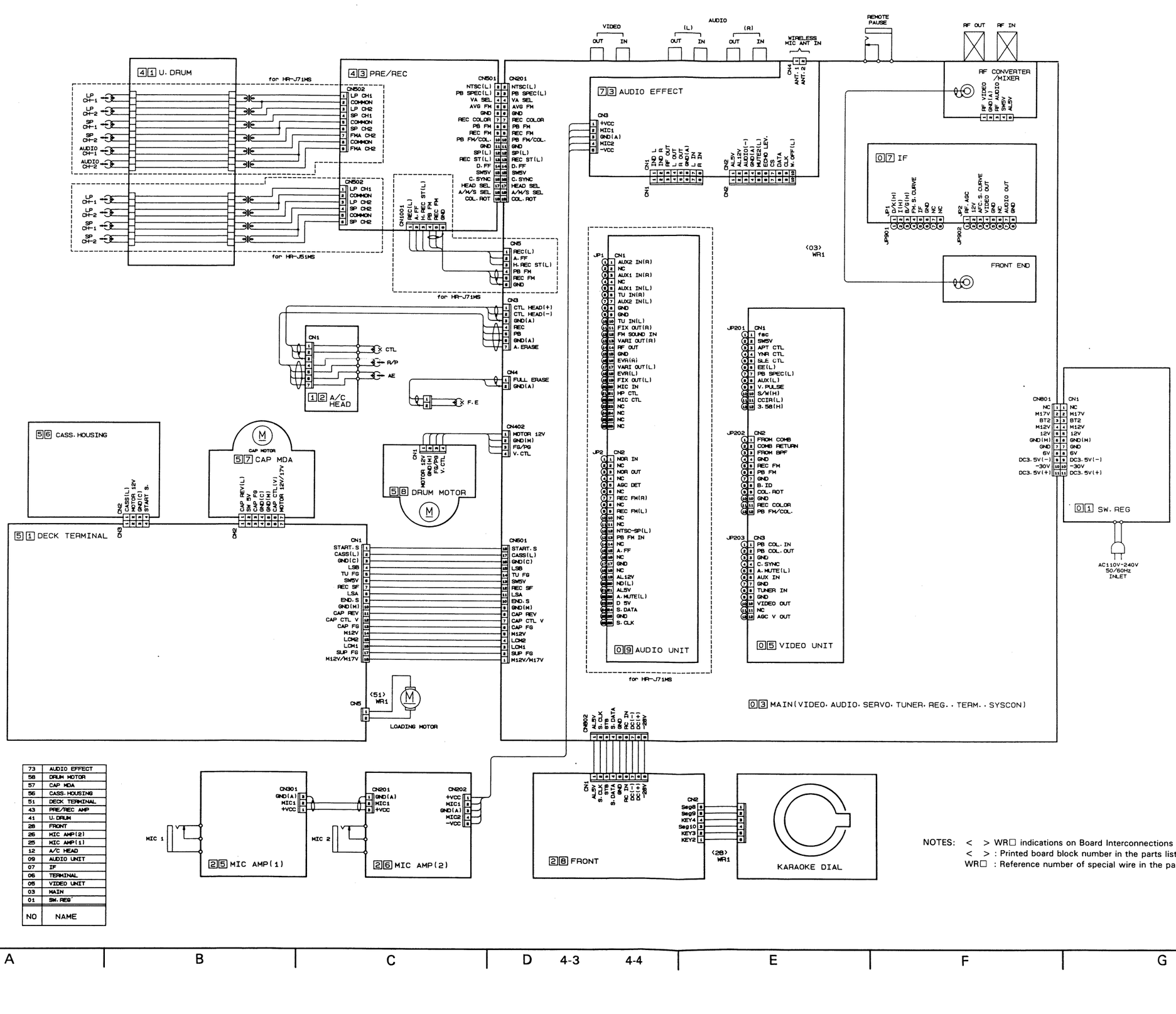
2) Double pattern :



Notes:
1) **For general information in service manual, please refer to the Service Manual of GENERAL INFORMATION Edition 4 No. 82054D (January 1994).**
2) **For repairing SMC (Surface Mounted Components), please refer to the VIDEO SERVICE GUIDE No. VTS81001.**

S40884-01

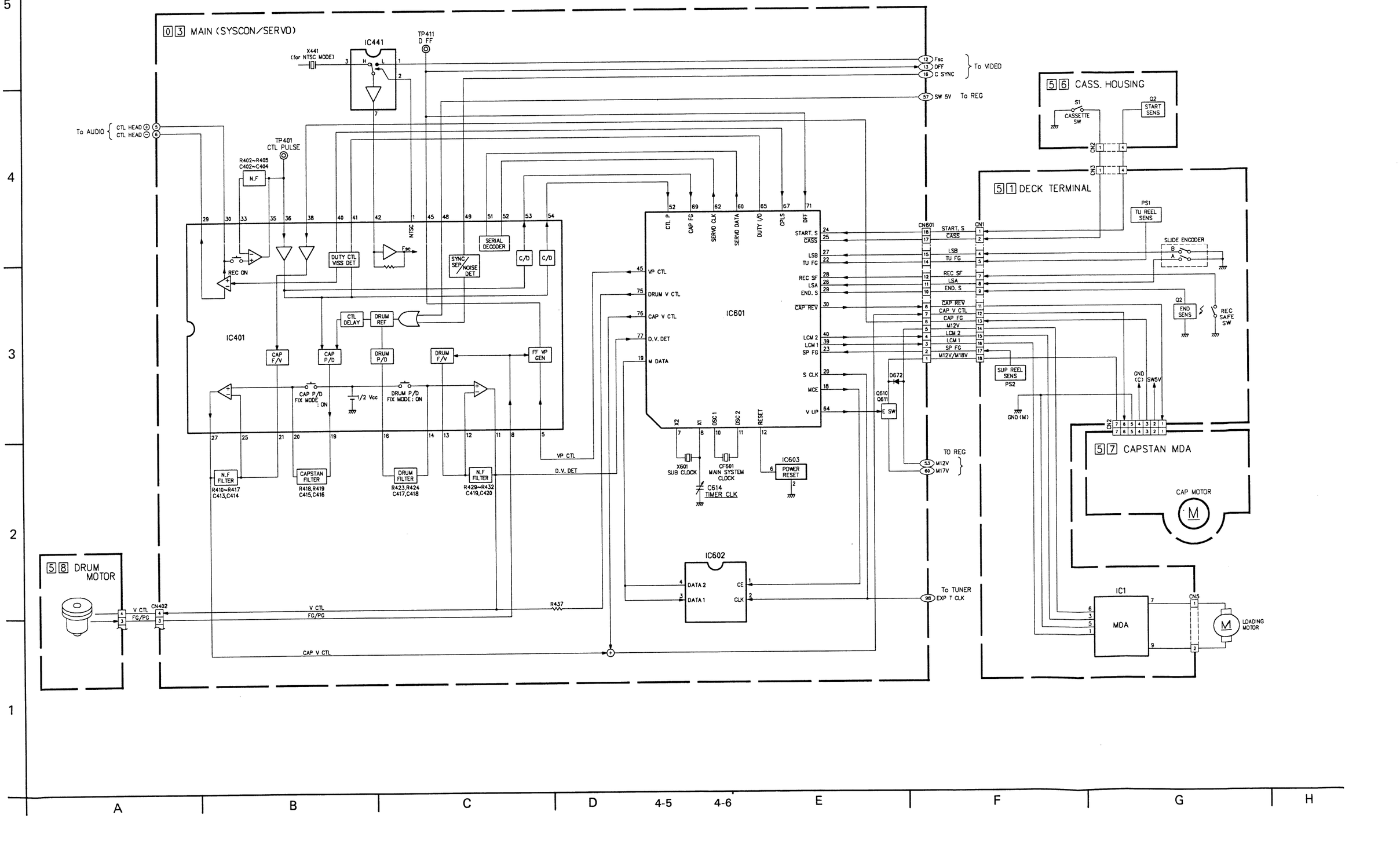
4.1 BOARD INTERCONNECTIONS



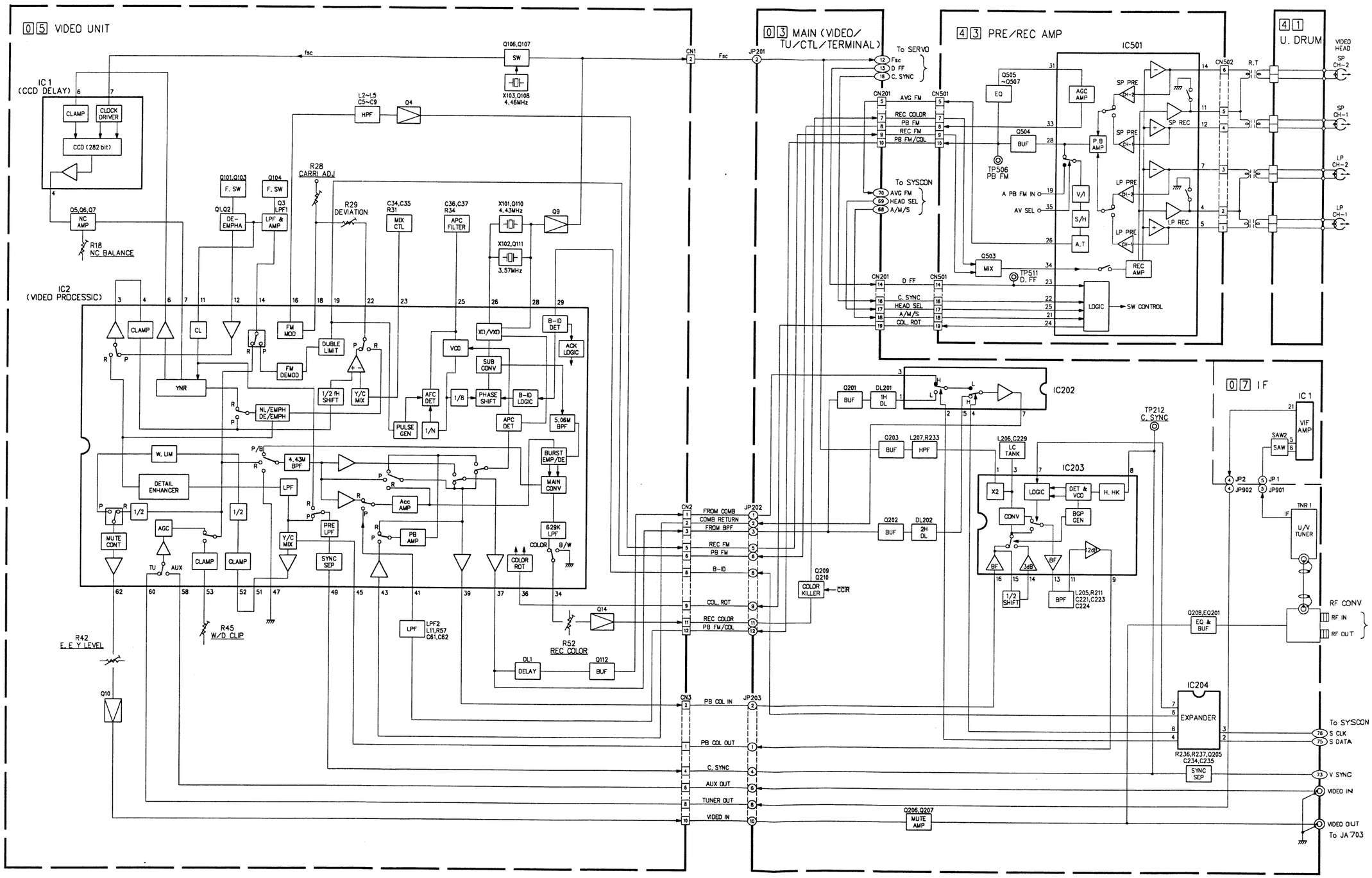
73	AUDIO EFFECT
58	DRUM MOTOR
57	CAP MDA
56	CASS. HOUSING
51	DECK TERMINAL
43	PRE/REC AMP
41	U. DRUM
28	FRONT
26	MIC AMP(2)
25	MIC AMP(1)
12	A/C HEAD
09	AUDIO UNIT
07	IF
06	TERMINAL
05	VIDEO UNIT
03	MAIN
01	SW. REG
NO	NAME

NOTES: < > WR□ indications on Board Interconnections are as shown below.
< > : Printed board block number in the parts list.
WR□ : Reference number of special wire in the parts list.

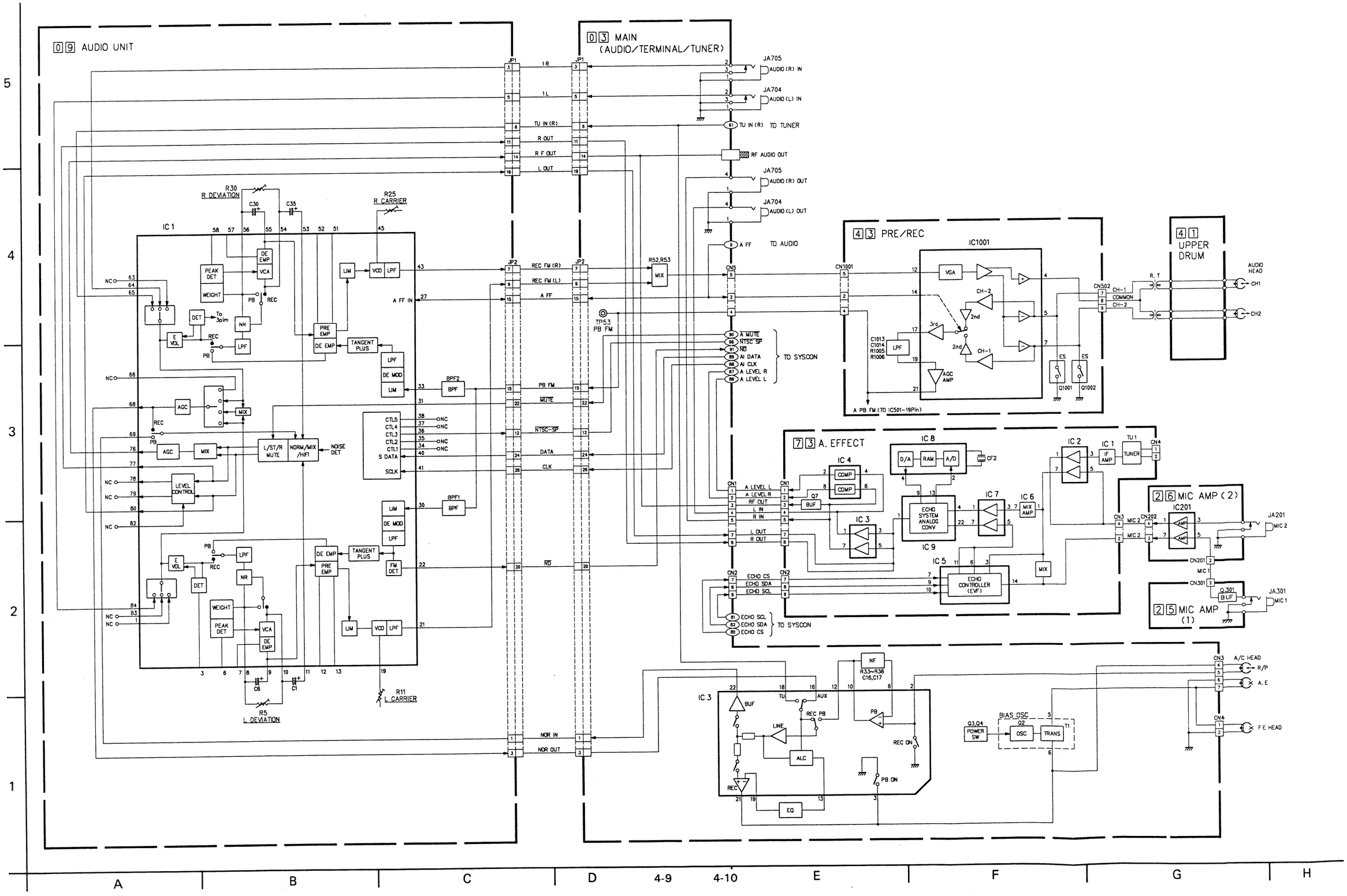
4.2 SYSCON/SERVO BLOCK DIAGRAM



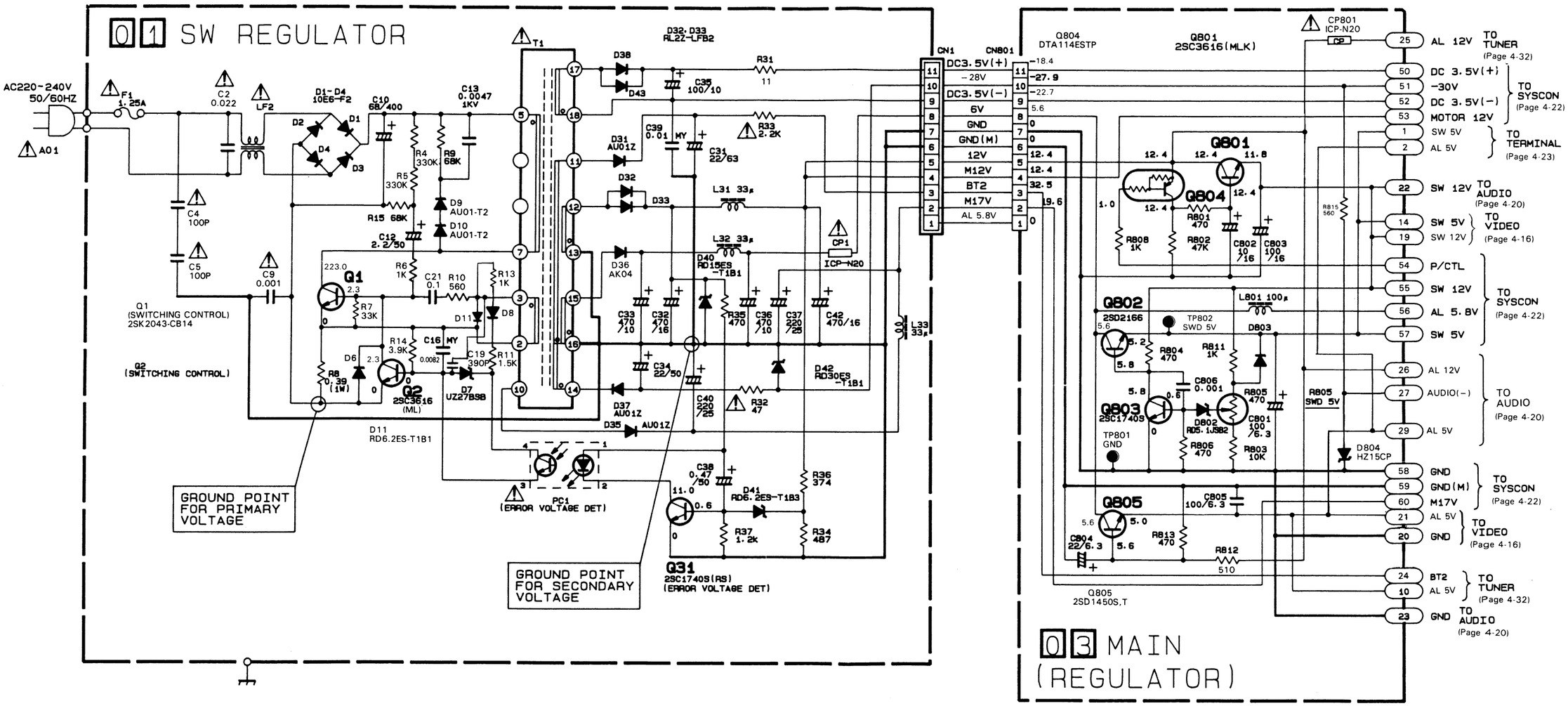
4.3 VIDEO BLOCK DIAGRAM

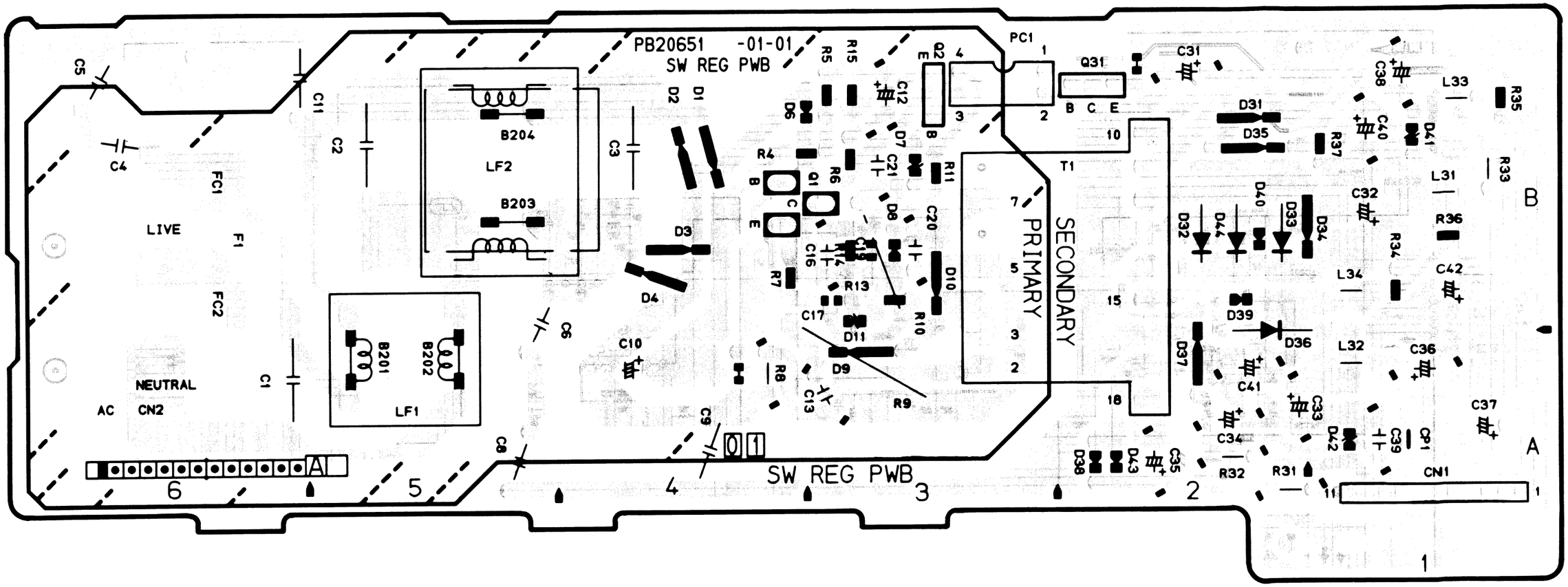


4.4 AUDIO BLOCK DIAGRAM (HR-J71MS only)



4.5 SWITCHING REGULATOR SCHEMATIC DIAGRAM





MAIN CONPONENT PARTS LOCATION GUIDE

<SW REG PWB>

REF. No.	LOCATION
TRANSISTOR	
Q1	3B
Q2	3B
Q31	2B

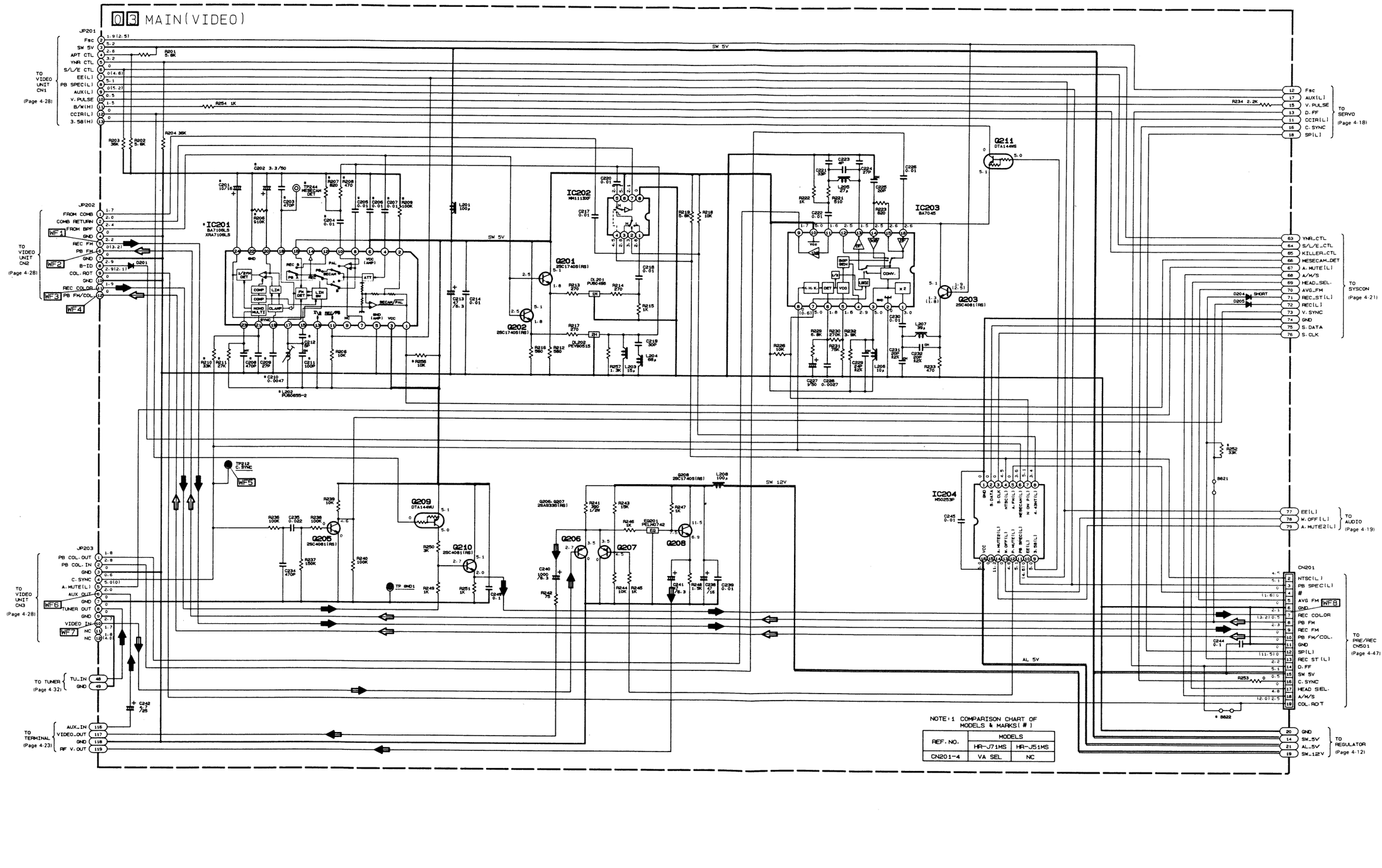
REF. No.	LOCATION
DIODE	
D1	4B
D2	4B
D3	4B
D4	4B
D6	4B
D7	3B
D8	3B
D9	3A
D10	3B
D31	2B

REF. No.	LOCATION
DIODE	
D32	2B
D33	2B
D35	2B
D36	2B
D37	2A
D38	2A
D40	2B
D41	1B
D42	1A
D43	2A

REF. No.	LOCATION
CONNECTOR	
CN1	1A

REF. No.	LOCATION
CP	
CP1	1A

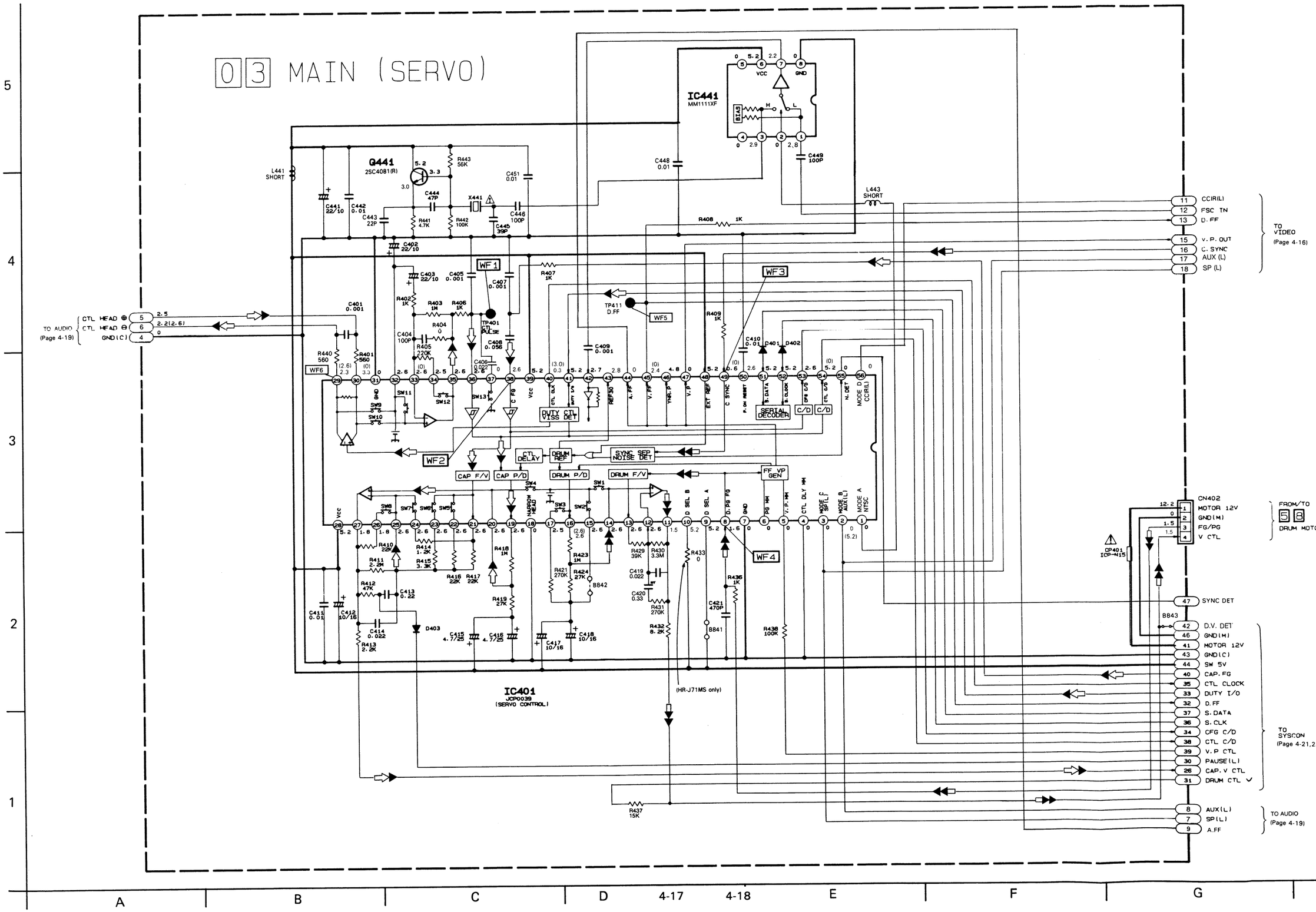
4.7 VIDEO SCHEMATIC DIAGRAM



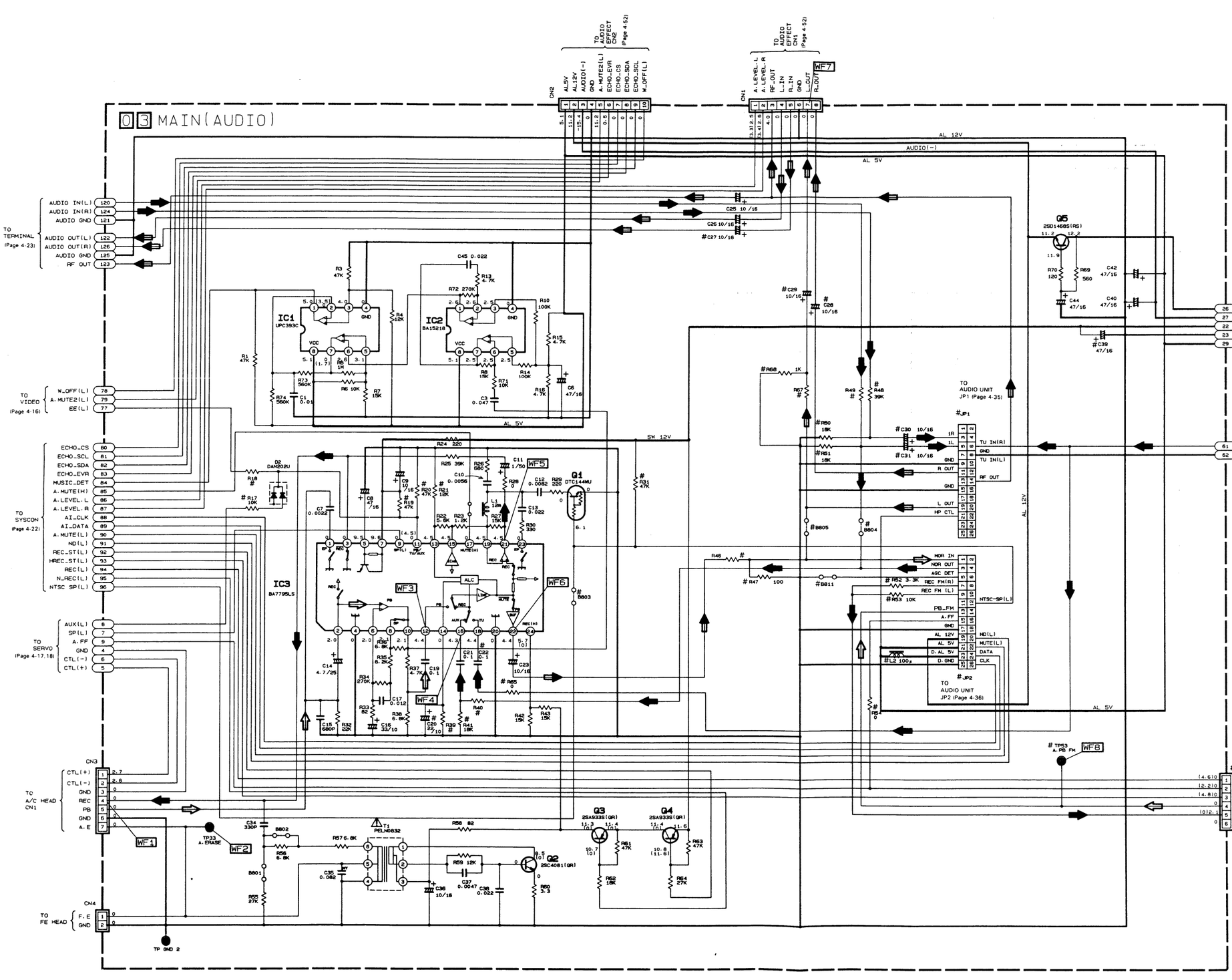
A B C D E F G H

4-15 4-16

4.8 SERVO SCHEMATIC DIAGRAM



4.9 AUDIO SCHEMATIC DIAGRAM



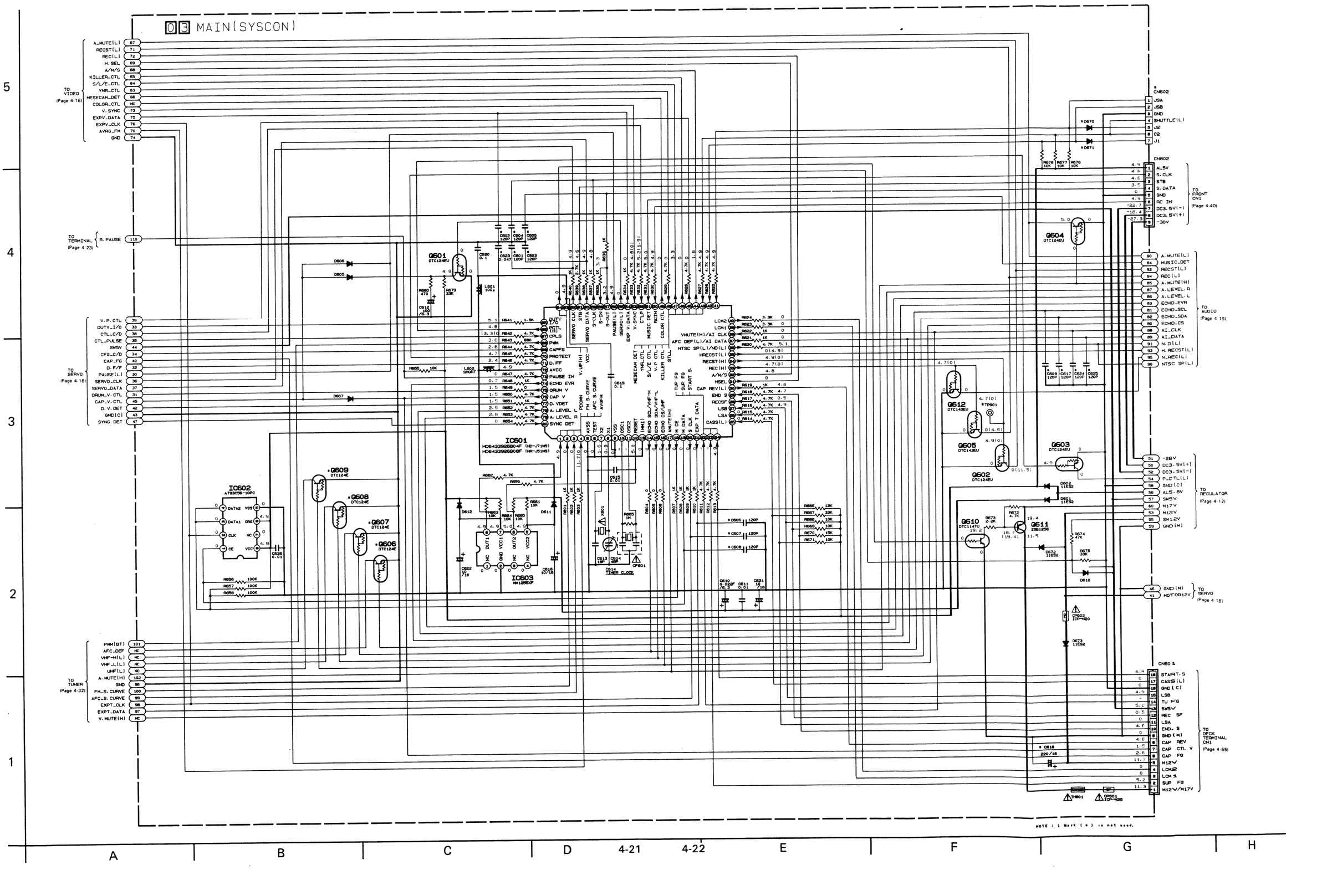
NOTE: 1

COMPARISON CHART OF MODELS & MARKS(#)

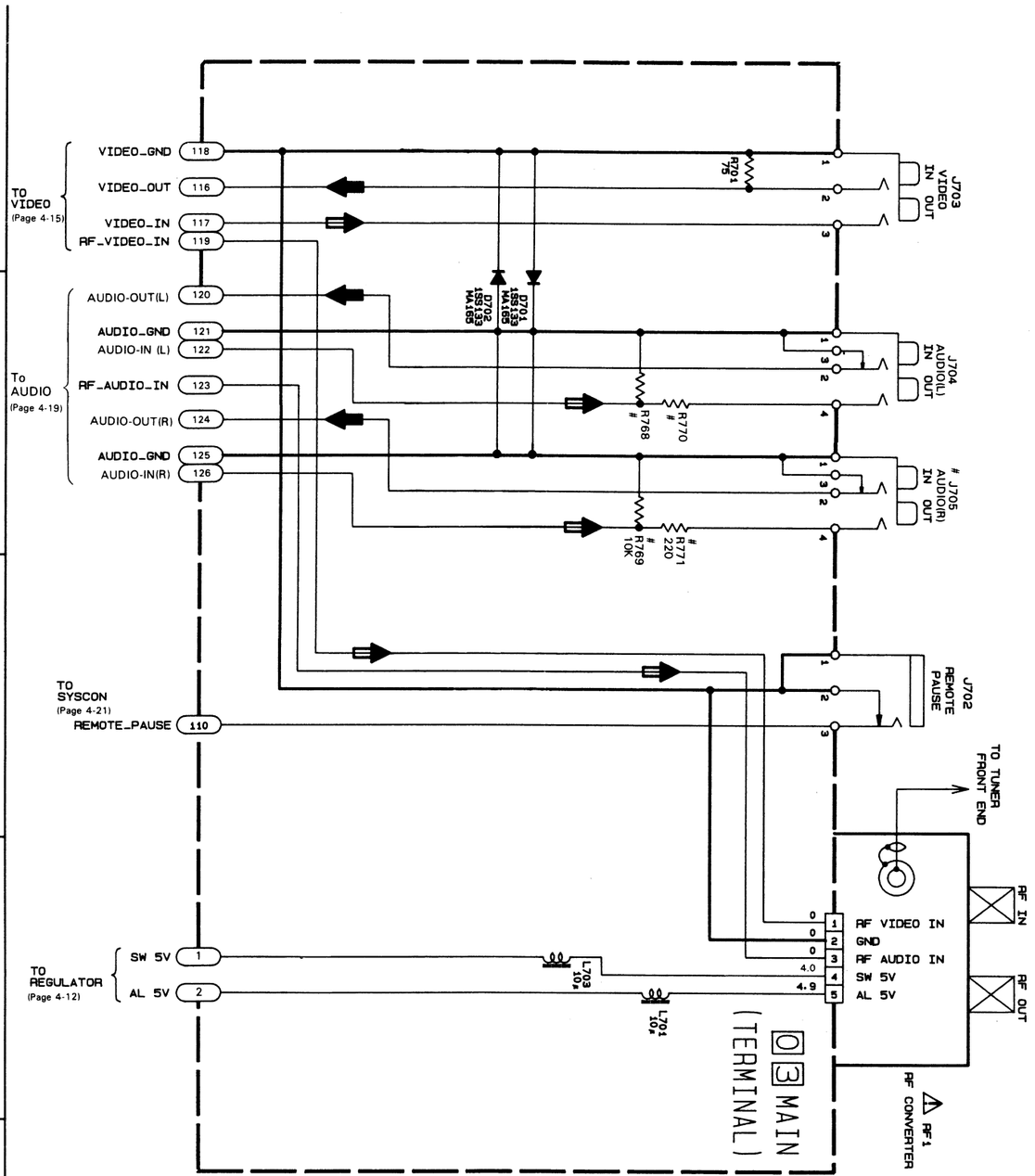
REF. NO.	MODELS	
	HR-J71MS	HR-J51MS
CN5	USED	OPEN
TP53	USED	NOT USED
D1	OPEN	USED
R17	OPEN	USED
R18	0	12K
R19	USED	OPEN
R20	USED	OPEN
R21	OPEN	USED
R31	USED	OPEN
R39	0	4.7M
R40	0	47K
R41	OPEN	USED
R46	3.3K	0
R47	USED	OPEN
R48	USED	OPEN
R49	39K	0
R50	USED	OPEN
R51	USED	OPEN
R52	USED	OPEN
R53	USED	OPEN
R54	USED	OPEN
R65	OPEN	USED
R67	0	1K
R68	OPEN	USED
C20	OPEN	USED
C22	OPEN	USED
C27	USED	OPEN
C28	USED	OPEN
C29	USED	SHORT
C30	USED	OPEN
C31	USED	OPEN
C39	USED	OPEN
L2	USED	OPEN
JP1	USED	OPEN
JP2	USED	OPEN
B811	USED	OPEN
B805	OPEN	USED
B804	OPEN	USED
B803	OPEN	USED

NOTE:2 Mark (*) is not used.

4.10 SYSCON SCHEMATIC DIAGRAM



4.11 TERMINAL SCHEMATIC DIAGRAM



NOTE: COMPARISON CHART OF MODELS & MARKS (#)

REF. NO.	MODELS	
	HR-J71MS	HR-J51MS
R768	10K	100K
R769	USED	OPEN
R770	220	0
R771	USED	OPEN
J705	USED	NOT USED

4.12 MAIN CIRCUIT BOARD

MAIN COMPONENT PARTS LOCATION GUIDE <MAIN PWB>

REF. No.	LOCATION
IC	
IC1	14K
IC2	13L
IC3	12M
IC202	20F
IC203	19F
IC204	14C
IC401	12J
IC441	18B
IC601	7E
IC602	6G
IC603	9F
IC901	9M
IC902	6L
TRANSISTOR	
Q1	14N
Q2	12O
Q3	12N
Q4	13N
Q5	20M
Q201	21H
Q202	21H
Q203	19E
Q205	18C
Q206	21M
Q207	21M
Q208	21O
Q209	21I
Q210	21I
Q211	21G
Q441	20B
Q601	8B
Q602	12D
Q603	9D
Q604	13K
Q605	12D
Q610	4I
Q611	4L
Q612	11D
Q801	1C
Q802	3D
Q803	3D
Q804	2D
Q805	2C
Q901	8L
Q902	6L
Q903	7L
Q904	8L
Q905	4M
Q906	6N
Q907	6L
Q911	10N
DIODE	
D1	14M
D201	21I
D205	16L
D401	16F
D402	16F
D403	12E
D601	4G
D602	4G
D605	10D
D606	10D
D607	10D
D610	5B
D611	10F
D612	9F
D672	4J
D673	6J
D701	11P
D702	11P
D802	3C
D803	3B
D804	1F
D901	8N

REF. No.	LOCATION
CONNECTOR	
CN1	17O
CN2	19O
CN3	9K
CN4	11K
CN5	20L
CN201	17L
CN402	9K
CN601	7J
CN801	2E
CN802	2A
ADJUSTMENT	
C614	6F
R805	3C
TEST POINT	
TP33	11N
TP53	20L
TP212	19C
TP401	20I
TP411	19H
TP801	1D
TP802	3C
TPGND1	20H
TPGND2	13O
CP	
CP401	7K
CP601	5K
CP602	5K
CP801	2E

LEADLESS COMPONENT PARTS LOCATION GUIDE <MAIN PWB>

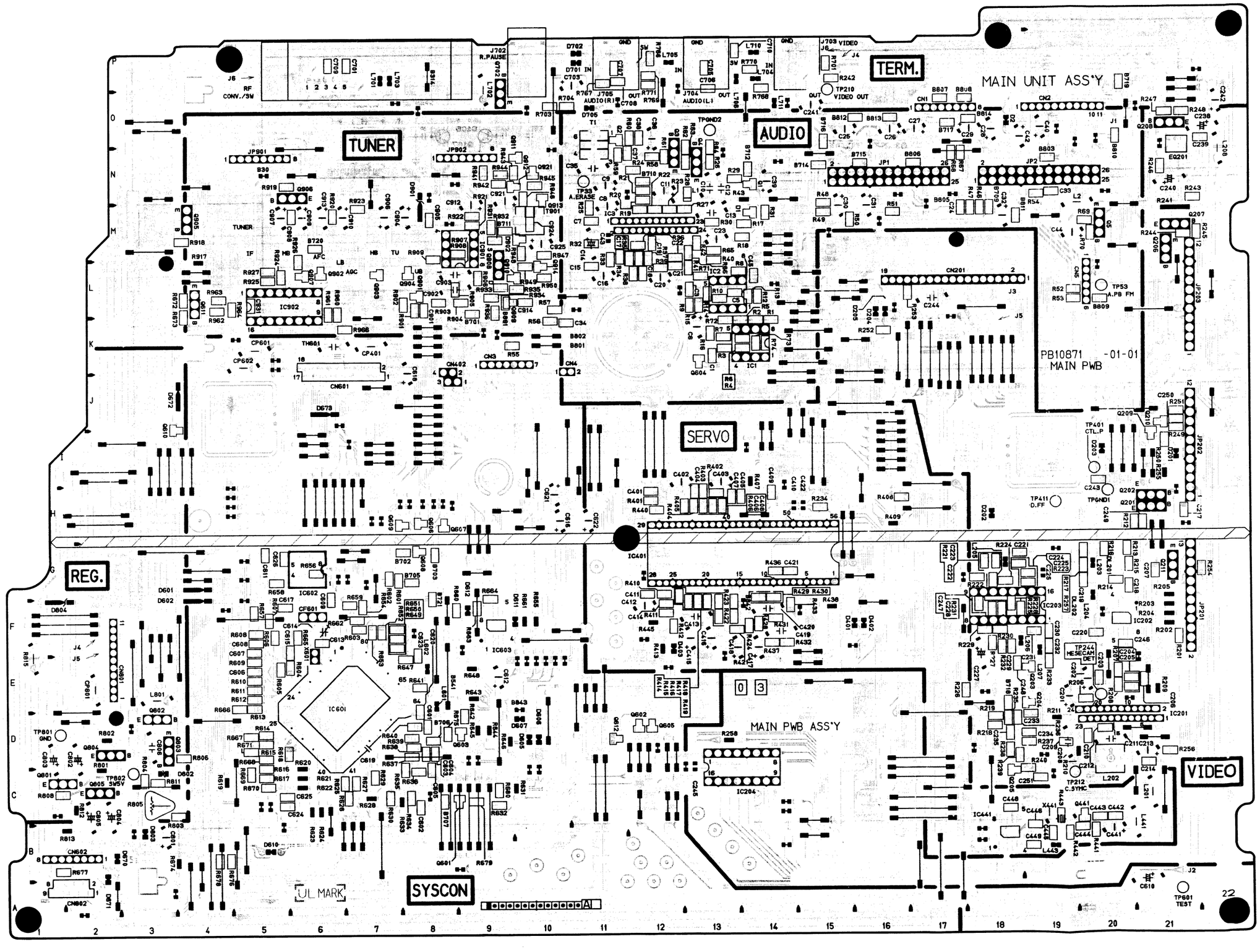
REF. No.	LOCATION
IC	
IC202	20F
IC441	18B
IC603	9F
TRANSISTOR	
Q1	14N
Q2	12O
Q203	19E
Q204	19D
Q205	18C
Q209	21I
Q210	21I
Q441	20B
Q601	8B
Q602	12D
Q603	9D
Q604	13K
Q605	12D
Q606	8H
Q607	8H
Q608	8G
Q609	8H
Q610	4I
Q612	11D
Q901	8L
Q902	6L
Q903	7L
Q904	8L
Q907	6L
Q909	10L
Q910	10L
Q911	10N
Q912	10N
Q913	10N
Q914	10L
Q921	10N
DIODE	
D1	14M
D902	10M
RESISTOR	
R1	14K
R2	14K
R3	13K
R4	13J
R5	14K
R6	13J
R7	13K
R8	14L
R9	13L
R10	13L
R12	14L
R13	14L
R14	13L
R15	13L
R16	13K
R17	14M
R18	14M
R19	12M
R20	12N
R21	12N
R22	12N
R23	12M
R24	12N
R25	11M
R26	13N
R27	12N
R28	13N
R29	14N
R30	13M
R31	14M
R32	11M
R33	11M
R34	12M
R35	12M
R36	12M
R37	12M
R38	12L
R39	12L
R40	13M

REF. No.	LOCATION
RESISTOR	
R41	13L
R42	13M
R46	18N
R47	18N
R48	15M
R49	15M
R50	16M
R51	16M
R52	19L
R53	19L
R54	19N
R55	10K
R56	10K
R57	10L
R58	12N
R59	11N
R60	12O
R61	12O
R62	13O
R63	13O
R64	13N
R65	13M
R66	13L
R67	18N
R68	17N
R69	20M
R70	20M
R71	13L
R72	13K
R73	14K
R74	14K
R201	21F
R206	20E
R207	20E
R208	20E
R212	21H
R213	20G
R214	20G
R215	20G
R216	20G
R217	20G
R218	18D
R219	18D
R221	18G
R222	18G
R223	19G
R224	18G
R225	19F
R226	19F
R227	19F
R228	19F
R229	18F
R230	18F
R231	17F
R232	18E
R233	19E
R234	15H
R235	18E
R236	19D
R237	19D
R238	18D
R239	18C
R240	19C
R242	15P
R243	21N
R244	21M
R245	22M
R246	21N
R247	21O
R248	21O
R249	21I
R250	21I
R251	21J
R252	16K
R253	17L
R254	22G
R256	21D
R257	19F
R401	12H
R402	13H
R403	13H
R404	13H

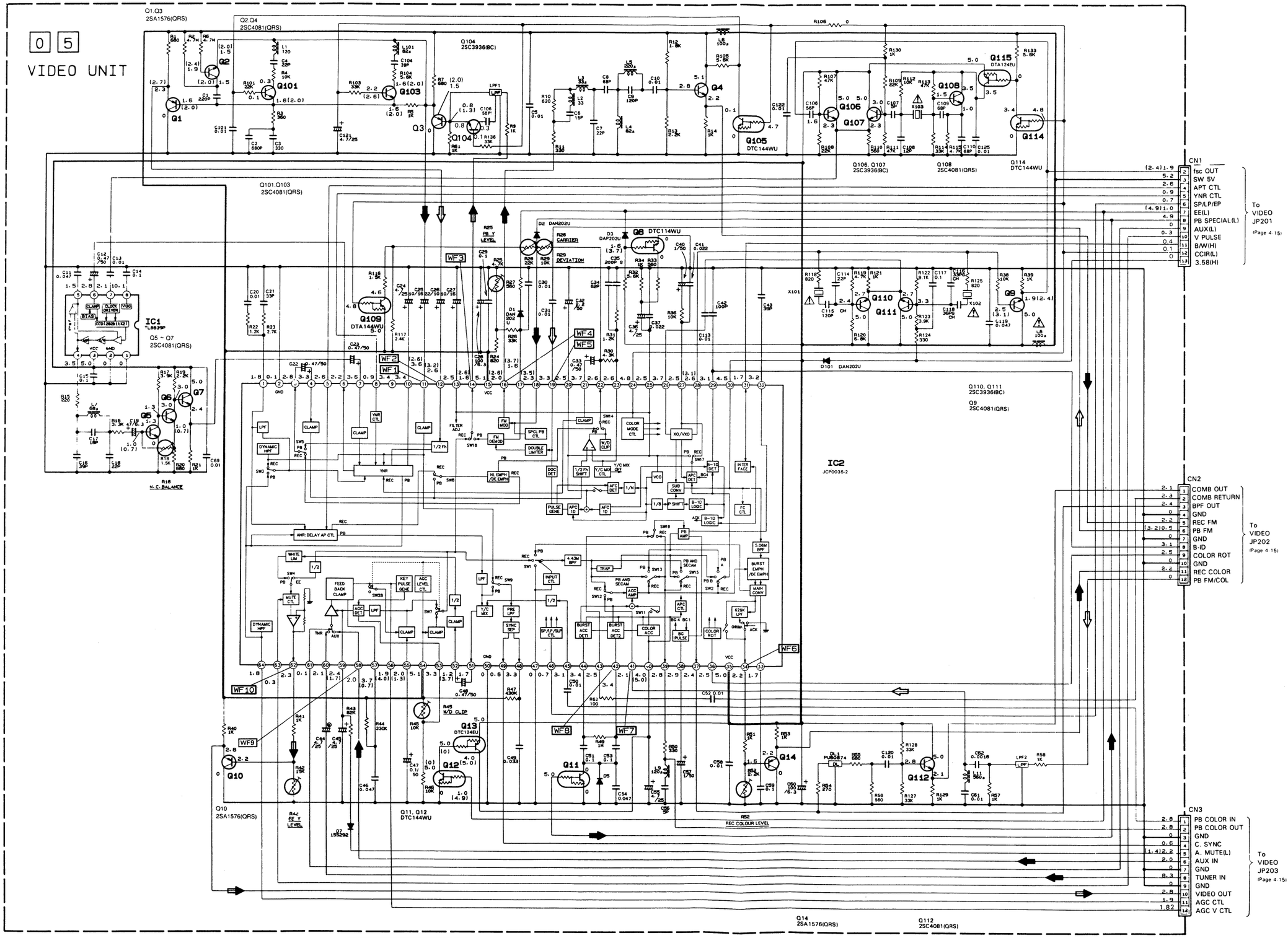
REF. No.	LOCATION
RESISTOR	
R405	13H
R406	14H
R408	16H
R410	12G
R411	12F
R412	12F
R414	13F
R415	13F
R416	13F
R417	13F
R418	13F
R419	13F
R421	14E
R422	13F
R423	13F
R424	14F
R428	14F
R429	14F
R430	14F
R431	14F
R432	15F
R433	15F
R436	14G
R437	14F
R440	12H
R441	20B
R442	19B
R443	19C
R601	7G
R602	7G
R603	7F
R604	6E
R605	5E
R606	5F
R607	5F
R608	5F
R609	5E
R610	5E
R611	5E
R612	5E
R613	5E
R614	5D
R615	5D
R616	5C
R617	5C
R618	6D
R625	7C
R626	7C
R627	7C
R629	7C
R630	7C
R632	9C
R634	8C
R635	8C
R636	8C
R637	7D
R638	7D
R639	7D
R640	7D
R641	8E
R642	9D
R647	8E
R649	8F
R650	8F
R651	8F
R652	7F
R653	7F
R654	7F
R656	6G
R657	5F
R658	5G
R659	7F
R660	9F
R662	7F
R663	9F
R664	9F
R665	6F
R666	5E
R667	5D
R668	5D
R669	5C
R670	5C

REF. No.	LOCATION
RESISTOR	
R671	5D
R672	4L
R673	4L
R675	8D
R676	4B
R677	2B
R678	4B
R679	9B
R680	9C
R701	15P
R703	10O
R704	11O
R766	12P
R767	11P
R768	14O
R769	12P
R770	14P
R771	12P
R803	4C
R804	3C
R806	4D
R808	1C
R811	3C
R901	8L
R902	8L
R903	8L
R904	9L
R905	9L
R906	9L
R907	9M
R908	9M
R909	9M
R918	4M
R919	6N
R920	6M
R921	9M
R922	9M
R923	7M
R924	6L
R925	5L
R926	6M
R927	5L
R931	9M
R932	9M
R933	9L
R934	10L
R935	10L
R936	9L
R941	9N
R942	9N
R943	10N
R944	9N
R945	10N
R946	10N
R947	10M
R948	10M
R949	10L
R950	10L
R960	7L
R961	6L
R962	4L
R963	4L
R964	5L
R966	7K
CAPACITOR	
C1	13K
C3	13L
C5	14L
C7	11M
C15	11L
C17	11M
C18	12L
C19	12M
C21	13L
C22	13M
C24	17M
C33	19N
C34	11K
C37	12N
C38	12O
C45	14L
C203	20E
C204	20E

REF. No.	LOCATION
CAPACITOR	
C205	20E
C206	21E
C207	21G
C209	19D
C210	20D
C212	20C
C214	21C
C217	21H
C218	20G
C219	20G
C220	20F
C221	18G
C222	17G
C223	17G
C224	19G
C225	19G
C228	17F
C229	18E
C230	19F
C231	18E
C232	19E
C233	19D
C234	19D
C235	18D
C239	22O
C243	20H
C246	20E
C247	17F
C248	18E
C249	20H
C250	21J
C251	21J
C401	12H
C404	13H
C405	14H
C406	14H
C407	14H
C408	14H
C409	14H
C411	12F
C414	12F
C421	14G
C442	15H
C443	20B
C444	20B
C445	19B
C446	19B
C448	18C
C449	19B
C601	8D
C602	8C
C603	8D
C604	8D
C605	8C
C606	5E
C607	5F
C608	5F
C609	6F
C611	5G
C613	6F
C615	6F
C617	6F
C620	8F
C623	8F
C624	6C
C625	6C
C626	6G
C701	7P
C705	13P
C706	13P
C707	11P
C708	12O
C709	6P
C710	14P
C901	8L
C905	8M
C908	6M
C914	10L
C924	10M
C931	5L


TUNER
AUDIO
TERM.
SERVO
REG.
SYSCON
VIDEO
MAIN UNIT ASS'Y
PB10871 -01-01
MAIN PWB
MAIN PWB ASS'Y
UL MARK
RF CONV./SW
R.PAUSE
AUDIO(R)
AUDIO(L)
VIDEO OUT
A.ERASE
A.PB FM
CTL.P
D.FF
TEST
IC601
IC602
IC603
IC401
IC201
IC202
IC203
IC204
IC902
IC1
IC2

4.13 VIDEO UNIT SCHEMATIC DIAGRAM



4.14 VIDEO UNIT CIRCUIT BOARD

MAIN COMPONENT PARTS LOCATION GUIDE

<VIDEO UNIT BOARD>

REF. No.	LOCATION
IC	
IC1	9C
IC2	3B

REF. No.	LOCATION
TRANSISTOR	
Q1	2C
Q2	2D
Q3	1D
Q4	6D
Q5	8D
Q6	9D
Q7	8C
Q8	7D
Q9	5C
Q10	2B
Q11	4A
Q12	4B
Q13	5B
Q14	5A
Q101	2C
Q102	3D
Q103	1C

REF. No.	LOCATION
TRANSISTOR	
Q104	1D
Q105	3D
Q106	6C
Q107	6C
Q108	8C
Q109	3C
Q110	5C
Q111	5D
Q112	6A
Q114	9B
Q115	8C

REF. No.	LOCATION
DIODE	
D1	3B
D2	4D
D3	8D
D5	4A
D6	3B
D7	3A
D101	6C

REF. No.	LOCATION
CONNECTTOR	
CN1	8A
CN2	5A
CN3	2A

REF. No.	LOCATION
ADJUSTMENT	
R18	8D
R25	3B
R28	4C
R29	4C
R42	1B
R45	3B
R52	5A

LEADLESS COMPONENT PARTS LOCATION GUIDE

<VIDEO UNIT BOARD>

REF. No.	LOCATION
TRANSISTOR	
Q1	2C
Q2	2D
Q3	1D
D4	6D
Q5	8D
Q6	9D
Q7	8C
Q8	7D
Q9	5C
Q10	2B
Q11	4A
Q12	4B
Q13	5B
Q14	5A
Q101	2C
Q102	3D
Q103	1C
Q104	1D
Q105	3D
Q106	6C
Q107	6C
Q108	8C
Q109	3C
Q110	5C

REF. No.	LOCATION
TRANSISTOR	
Q111	5D
Q112	6A
Q114	9B
Q115	8C

REF. No.	LOCATION
DIODE	
D1	3B
D2	4D
D3	8D
D6	3B
D101	6C

REF. No.	LOCATION
RESISTOR	
R1	2D
R2	2D
R3	2C
R4	2D

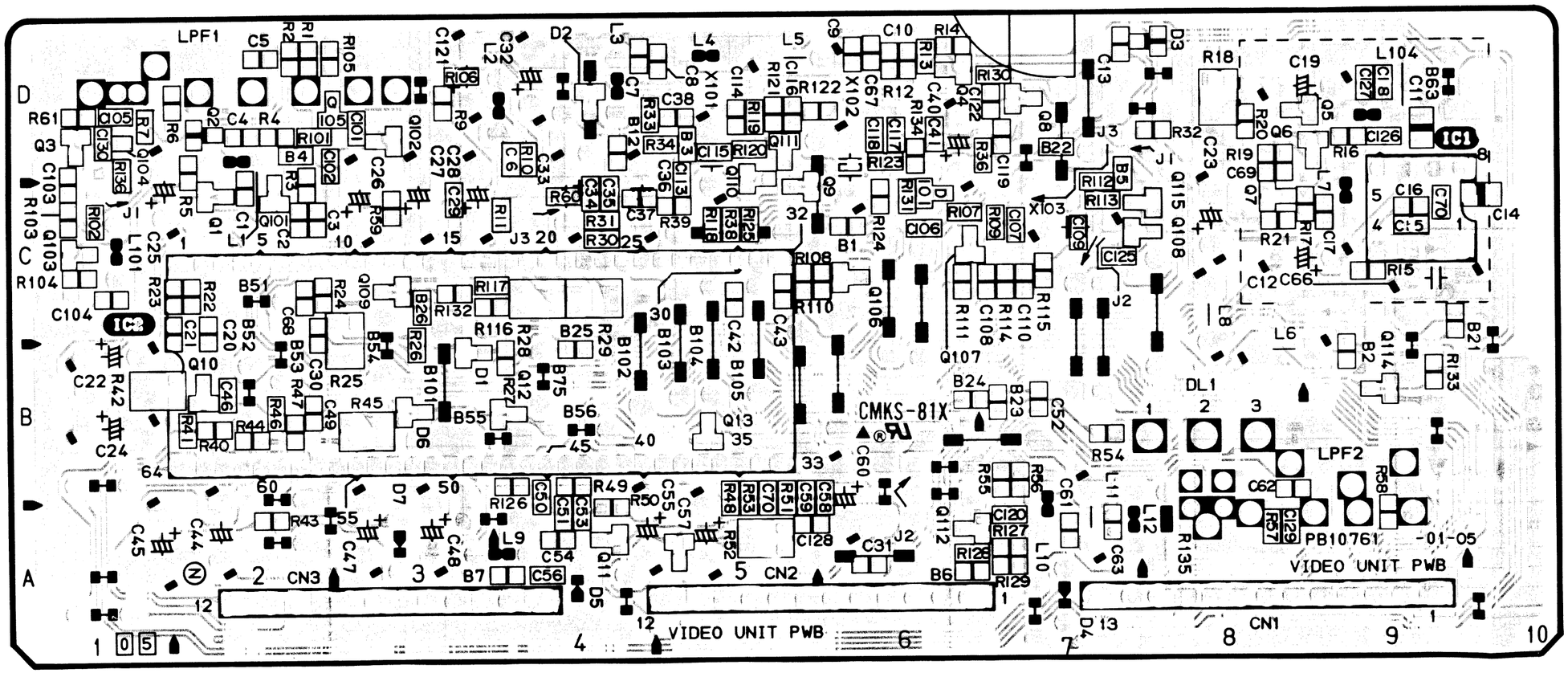
REF. No.	LOCATION
RESISTOR	
R5	2D
R6	2D
R7	1D
R9	3D
R10	4C
R11	4C
R12	6D
R13	6D
R14	6D
R15	9C
R16	9D
R17	9B
R18	8D
R19	8D
R20	8D
R21	8C
R22	2C
R23	2C
R24	2B
R25	3B
R26	3B
R27	4B
R28	4C
R29	4C

REF. No.	LOCATION
RESISTOR	
R30	4C
R31	4C
R32	8D
R33	4C
E34	5C
R36	7D
R38	5C
R39	5C
R40	2B
R41	2B
R42	1B
R43	2A
R44	2B
R45	3B
R46	2B
R47	2B
R48	5A
R49	4A
R50	4A
R51	5A
R52	5A
R53	5A
R54	7B
R55	7B

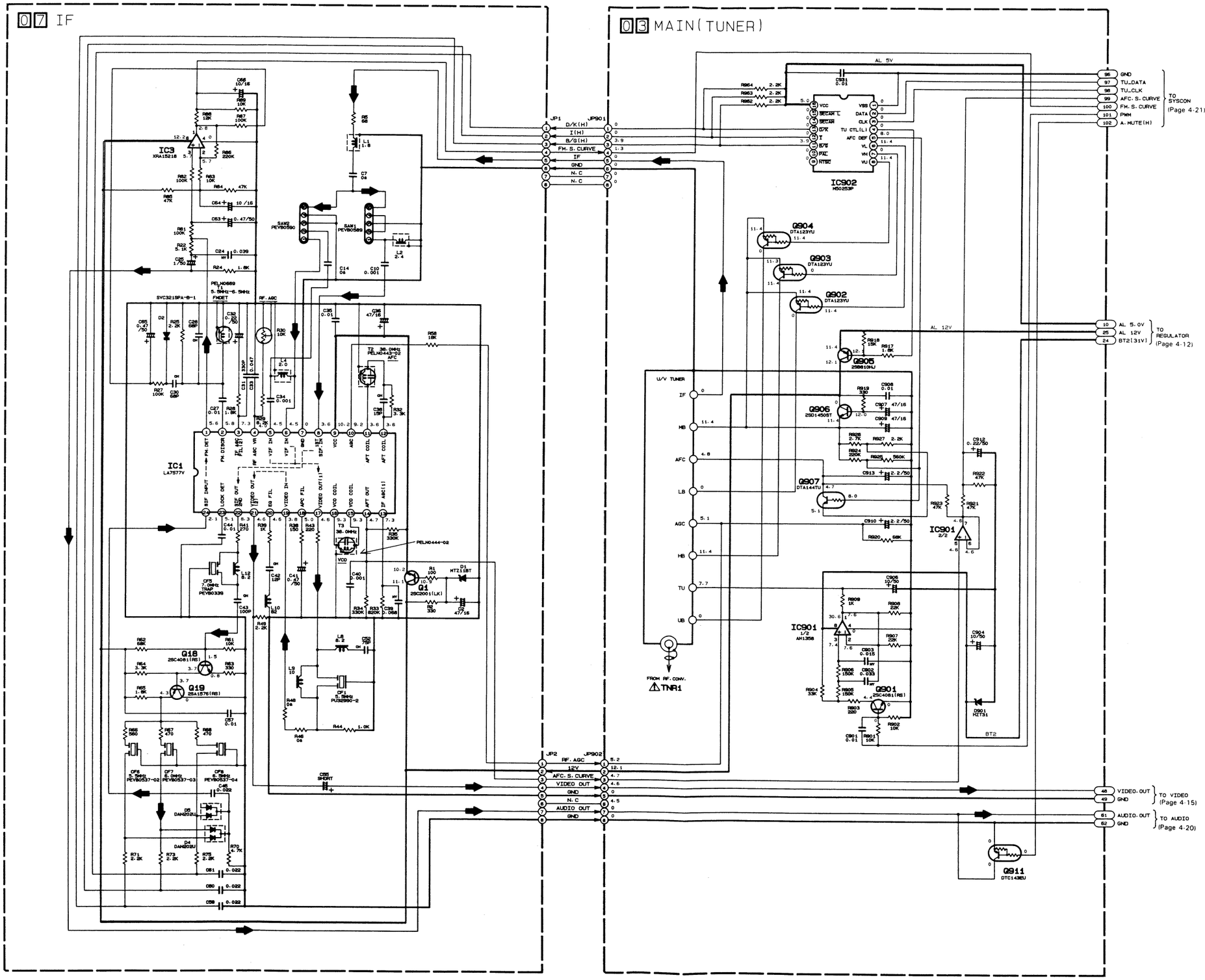
REF. No.	LOCATION
RESISTOR	
R56	7B
R57	8A
R58	9A
R59	3C
R60	4C
R61	1D
R101	2D
R103	1C
R104	1C
R105	2D
R106	3D
R107	6B
R108	5C
R109	7B
R110	5C
R111	6C
R112	7C
R113	7C
R114	7C
R115	7C
R116	4C
R117	4C
R118	5C
R119	5D
R120	5D
R121	5D
R122	6D
R123	6D
R124	6C
R125	5C
R126	4A
R127	7A
R128	6A
R129	7A
R130	7D
R131	6C
R132	3C
R133	9B
R134	6D
R136	1C

REF. No.	LOCATION
CAPACITOR	
C1	2C
C2	2C
C3	2C
C4	2D
C5	2D
C6	4D
C7	4D
C8	5D
C9	6D
C10	6D
C11	9D
C13	7D
C14	10C
C15	9C
C16	9C
C17	9C
C18	9D
C20	2C
C21	2C
C29	3C
C30	2B

REF. No.	LOCATION
CAPACITOR	
C31	6A
C34	4C
C35	4C
C37	4C
C38	5D
C41	6D
C42	5C
C43	5C
C46	2B
C49	2B
C50	4A
C51	4A
C52	7B
C53	4A
C54	4A
C56	4A
C58	6A
C59	5A
C61	7A
C62	8B
C63	7A
C67	6D
C68	2C
C69	8C
C70	5A
C101	3D
C102	2D
C103	1D
C104	1C
C105	1D
C106	6C
C107	7C
C108	7C
C109	7C
C110	7C
C113	5C
C114	5D
C115	5D
C116	5D
C117	6D
C118	6D
C119	7D
C120	7A
C122	7D
C125	7C
C126	9D
C127	9D
C128	5A
C129	8A

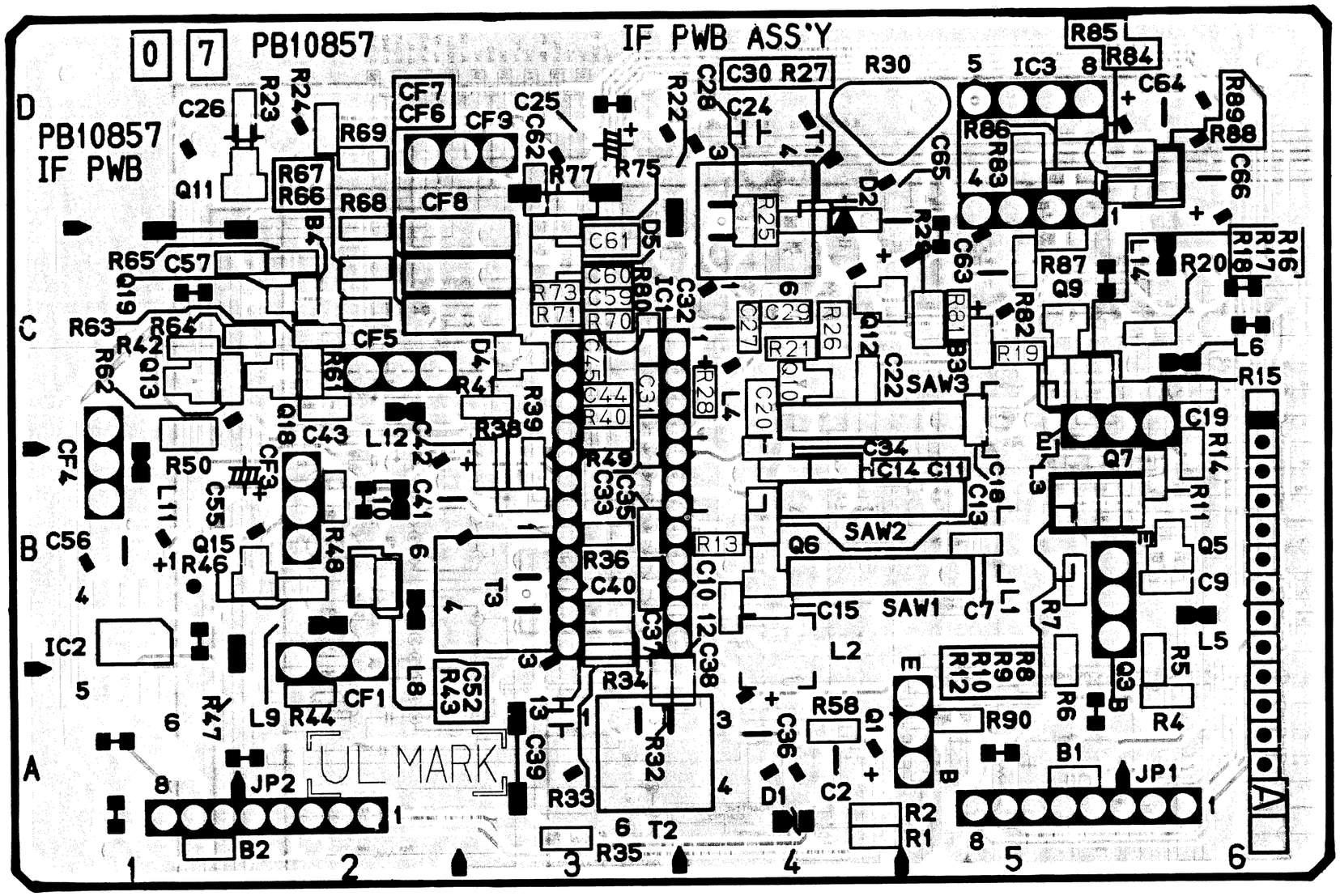


4.15 IF & TUNER CTL SCHEMATIC DIAGRAMS



4-31 4-32

4.16 IF CIRCUIT BOARD



MAIN COMPONENT PARTS LOCATION GUIDE <IF PWB>

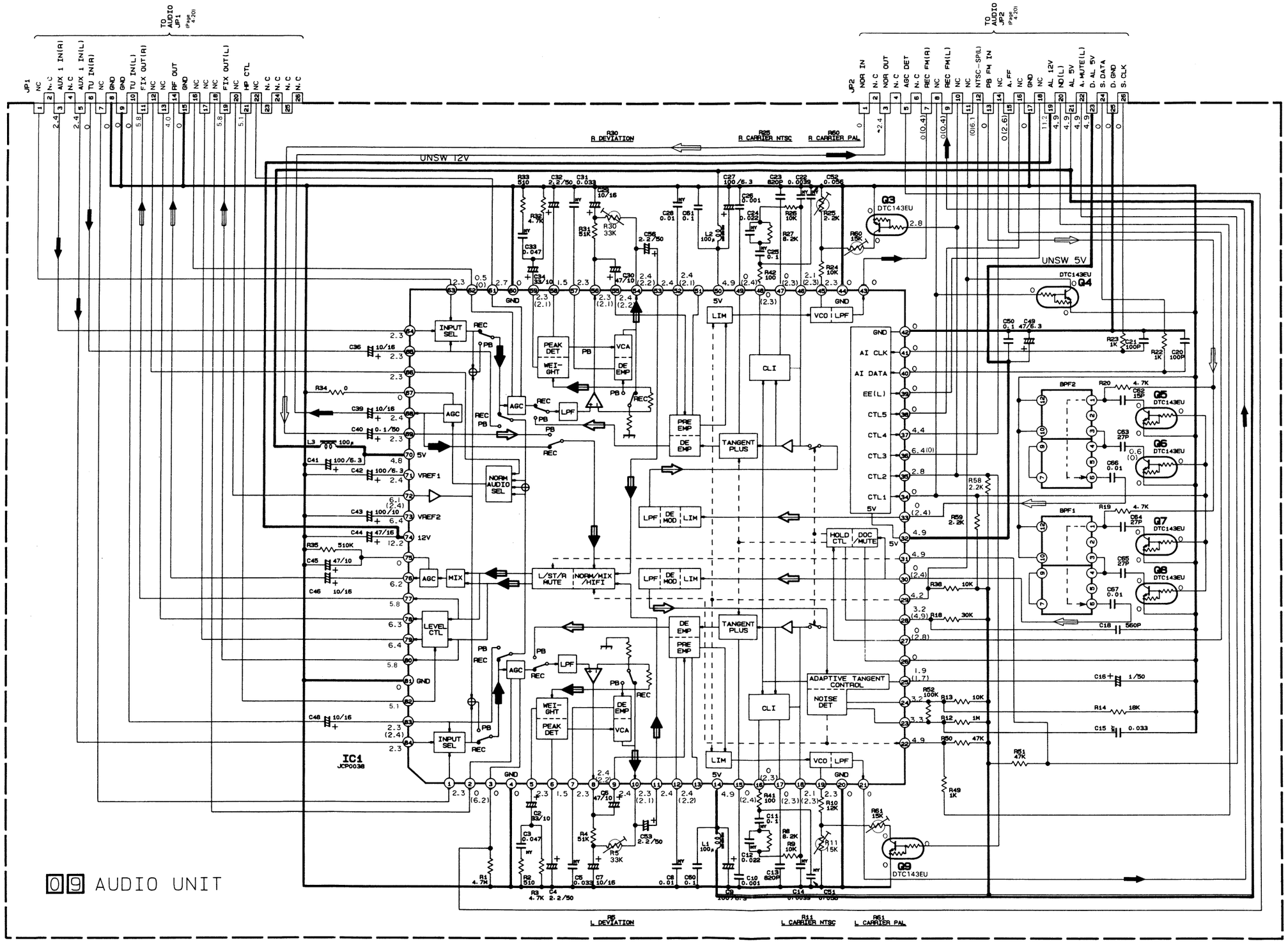
REF. No.	LOCATION
IC	
IC1	3C
IC3	5D
TRANSISTOR	
Q1	5A
Q18	2C
Q19	2C
DIODE	
D1	4A
D2	4D
D4	3C
D5	3C
CONNECTOR	
JP1	5A
JP2	2A
ADJUSTMENT	
R30	4D
T1	4D
T2	3A
T3	3B

LEADLESS COMPONENT PARTS LOCATION GUIDE <IF PWB>

REF. No.	LOCATION
IC	
IC2	1B
TRANSISTOR	
Q5	6B
Q6	4B
Q9	5C
Q10	4C
Q11	1D
Q12	4C
Q13	1C
Q15	2B
Q18	2C
Q19	2C
DIODE	
D4	3C
D5	3C
RESISTOR	
R1	4A
R2	4A
R4	6A
R5	6A
R6	5A
R7	5B
R8	5B
R9	5B
R10	5B
R11	6B
R12	5B
R13	4B
R14	6B
R15	6C
R16	6C
R17	6C
R18	6C
R19	5C
R20	6C
R21	4C
R23	2D
R24	2D
R25	4D
R26	4C
R27	4D
R28	4C
R29	5C
R32	3A
R33	3A
R34	3B
R35	3A
R36	3B
R38	3C
R39	3C
R40	3C
R41	3C
R42	1C
R43	2A
R44	2A
R46	1B
R48	2B
R49	3B

REF. No.	LOCATION
RESISTOR	
R50	1C
R58	4A
R61	2C
R62	1C
R63	1C
R64	1C
R65	1C
R66	2D
R67	2D
R68	2D
R69	2D
R70	3C
R71	3C
R73	3C
R75	3D
R77	3D
R80	3C
R81	5C
R82	5C
R83	5D
R84	5D
R85	5D
R86	5D
R87	5C
R88	6D
R89	6D
R90	5A
CAPACITOR	
C7	5B
C9	6B
C10	4B
C11	5B
C13	5B
C14	5B
C15	4B
C18	5B
C19	6C
C20	4C
C22	4C
C27	4C
C28	4D
C29	4C
C30	4D
C31	3C
C33	3B
C34	4B
C35	3B
C37	3A
C38	4A
C40	3B
C42	2B
C43	2C
C44	3C
C45	3C
C52	3A
C57	1C
C59	3C
C60	3C
C61	3D
C62	3D

4.17 AUDIO UNIT SCHEMATIC DIAGRAM (HR-J71MS only)



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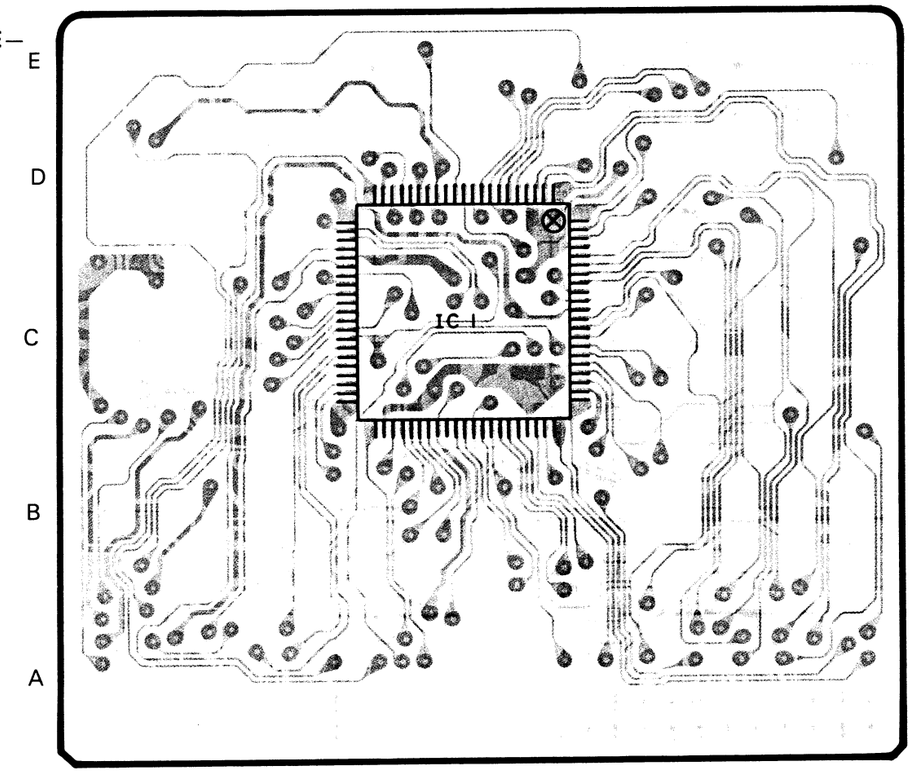
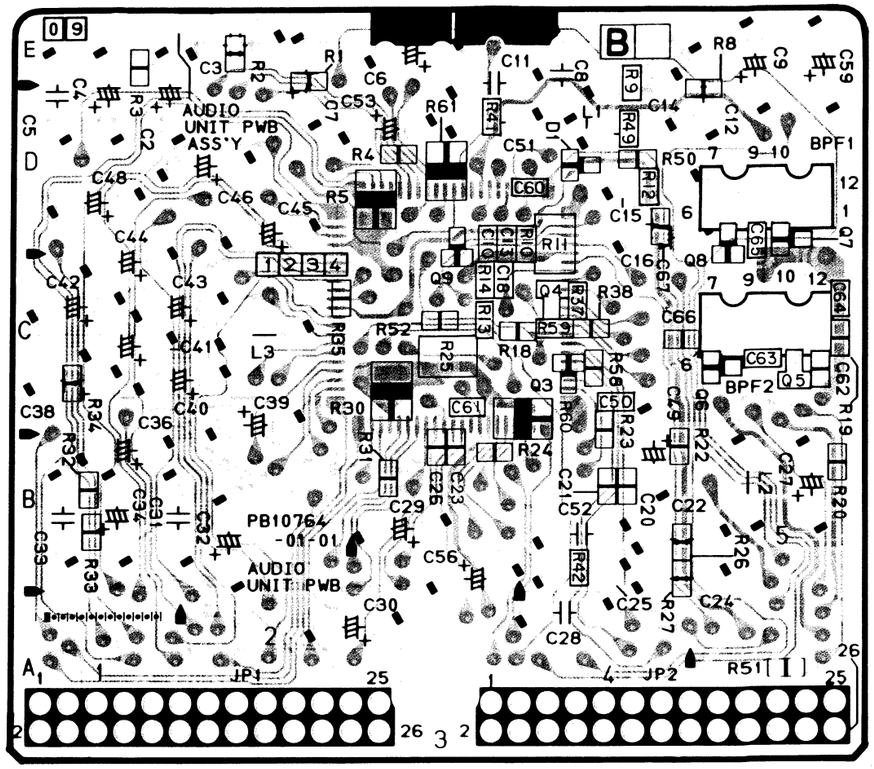
4.18 AUDIO UNIT CIRCUIT BOARD (HR-J71MS only)

—COMPONENT SIDE—
(A)



—FOIL SIDE—
(B)



LEADLESS COMPONENT PARTS LOCATION GUIDE <AUDIO UNIT PWB>

REF. No.	LOCATION
IC	
IC1	A-3C
TRANSISTOR	
Q3	B-4C
Q4	B-4C
Q5	B-5C
Q6	B-5C
Q7	B-5D
Q8	B-5D
Q9	B-3C
DIODE	
D1	B-4D
RESISTOR	
R1	B-2E
R2	B-2E
R3	B-1E
R4	B-3D
R5	B-3D
R8	B-5D
R9	B-4D
R10	B-4D
R11	B-4D
R12	B-4D

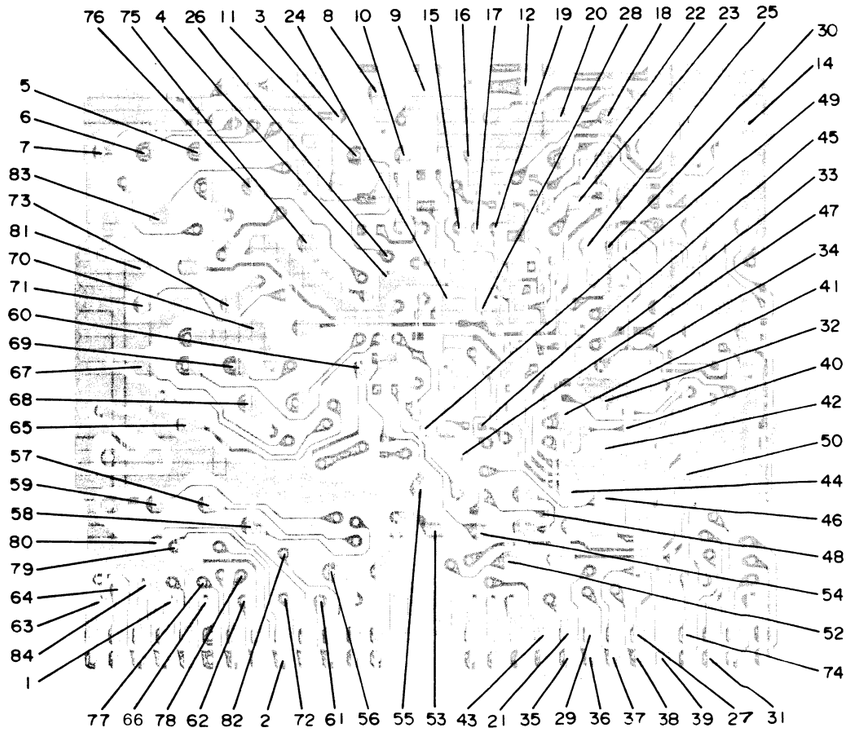
REF. No.	LOCATION
RESISTOR	
R13	B-3C
R14	B-3C
R18	B-3C
R19	B-5C
R20	B-5B
R22	B-4B
R23	B-4B
R24	B-3B
R25	B-3C
R26	B-4B
R27	B-4B
R30	B-3C
R31	B-3B
R32	B-1B
R33	B-1B
R34	B-1C
R35	B-2C
R37	B-4C
R38	B-4C
R41	B-3D
R42	B-4B
R49	B-4D
R50	B-4D
R51	B-5A

REF. No.	LOCATION
RESISTOR	
R52	B-3C
R58	B-4C
R59	B-4C
R60	B-4C
R61	B-3D
CAPACITOR	
C10	B-3D
C13	B-3D
C18	B-3C
C20	B-4B
C21	B-4B
C23	B-3B
C26	B-3B
C50	B-4C
C60	B-4D
C61	B-3C
C62	B-5C
C63	B-5C
C64	B-5C
C65	B-5D
C66	B-4C
C67	B-4D

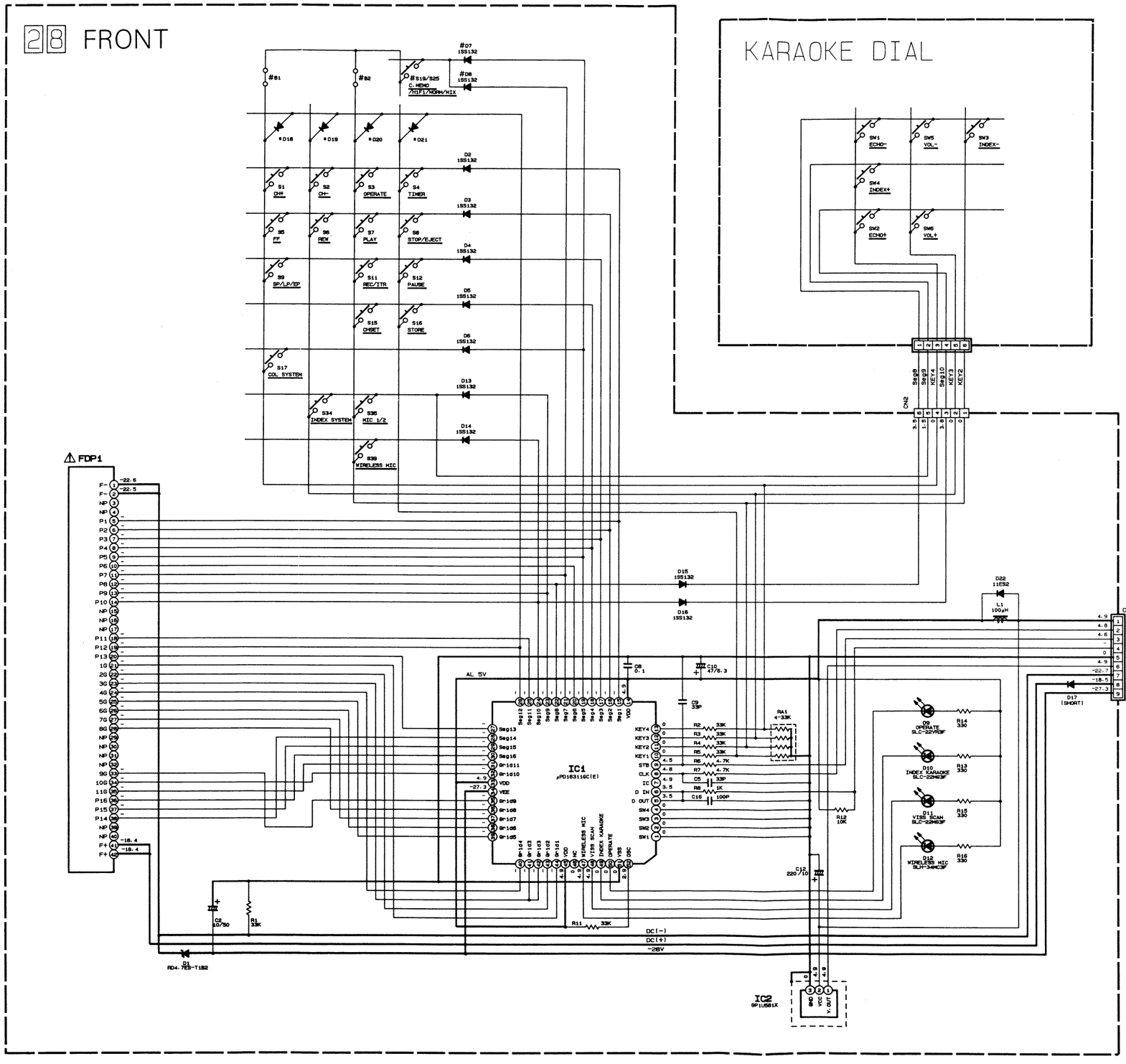
MAIN COMPONENT PARTS LOCATION GUIDE <AUDIO UNIT PWB>

REF. No.	LOCATION
IC	
IC1	A-3C
TRANSISTOR	
Q3	B-4C
Q4	B-4C
Q5	B-5C
Q6	B-5C
Q7	B-5D
Q8	B-5D
Q9	B-3C
CONNECTOR	
JP1	B-2A
JP2	B-4A
ADJUSTMENT	
R5	B-3D
R11	B-4D
R25	B-3C
R30	B-3C
R60	B-4C
R61	B-3D

—IC PIN NUMBER LOCATION (FOIL SIDE)—



4.19 FRONT SCHEMATIC DIAGRAM

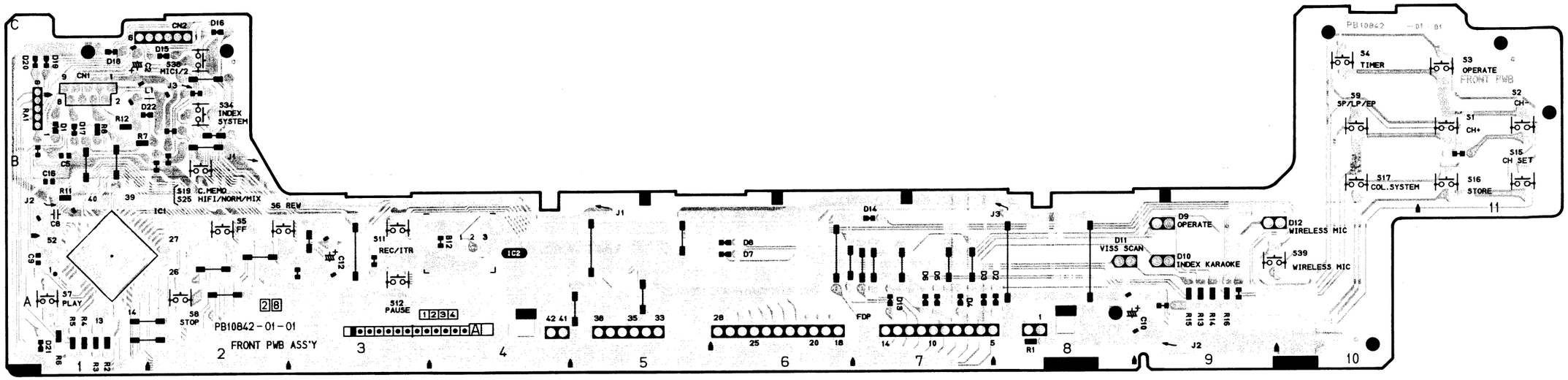


NOTE:1
COMPARISON CHART OF MODELS & MARKS(#)

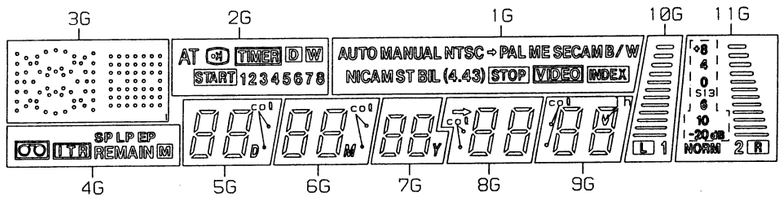
REF. NO.	MODELS	
	HR-J71MS	HR-J51MS
D7	OPEN	USED
D8	USED	OPEN
S19/S25	S25	S19
B1	USED	OPEN
B2	OPEN	USED

NOTE:2
Mark (*) is not used.

4.20 FRONT CIRCUIT BOARD



FDP GRID ASSIGNMENT



MAIN COMPONENT PARTS LOCATION GUIDE

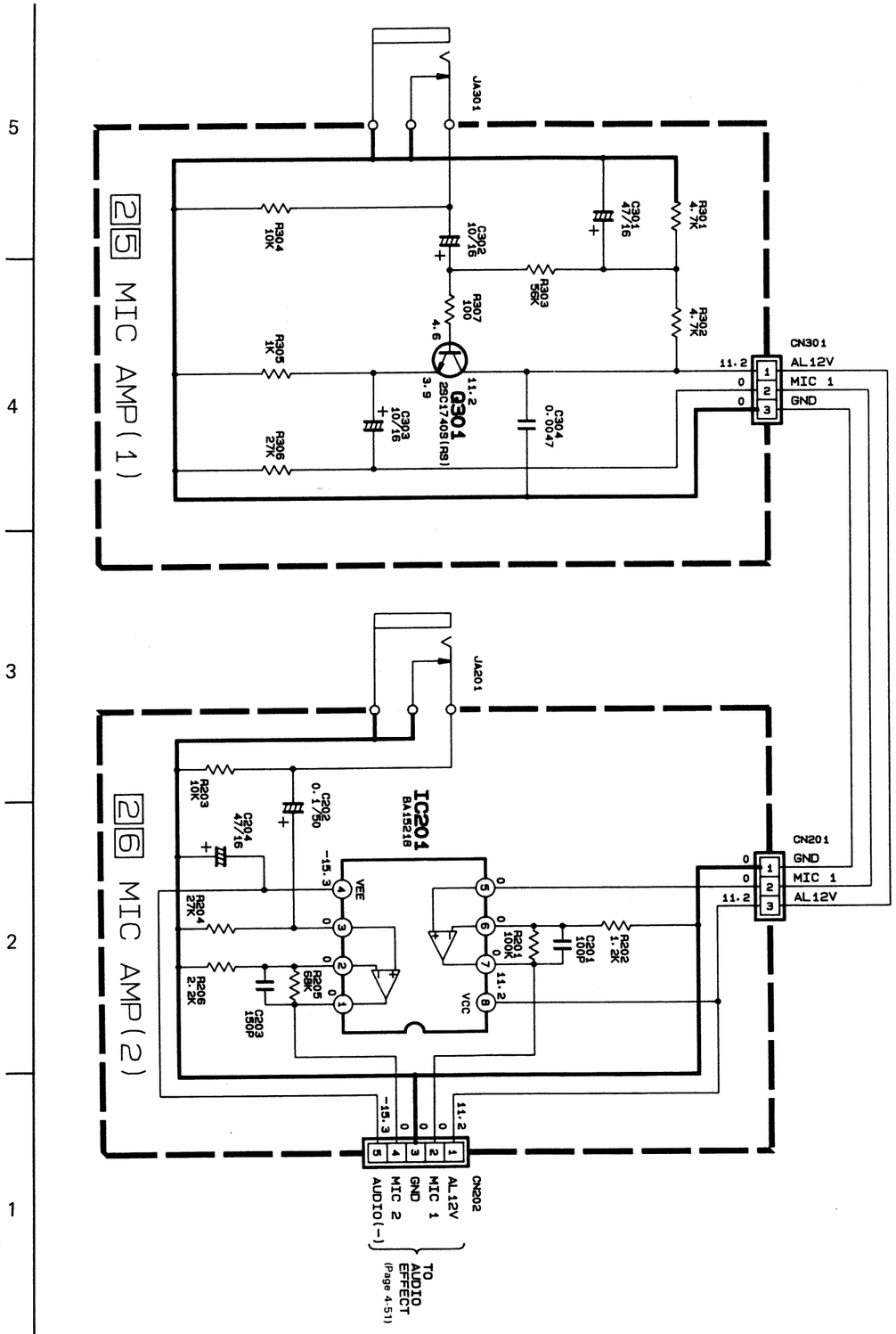
REF. No.	LOCATION
IC	
IC1	1A
IC2	4A
CONNECTOR	
CN1	1C

REF. No.	LOCATION
DIODE	
D1	1B
D2	7A
D3	7A
D4	7A
D5	7A
D6	7A

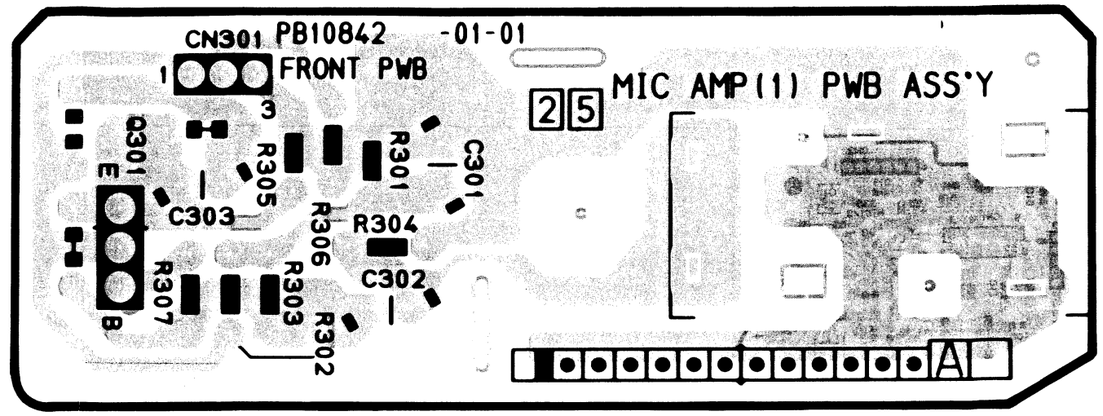
REF. No.	LOCATION
DIODE	
D7	6A
D8	6A
D9	9B
D10	9A
D11	8A
D12	9B

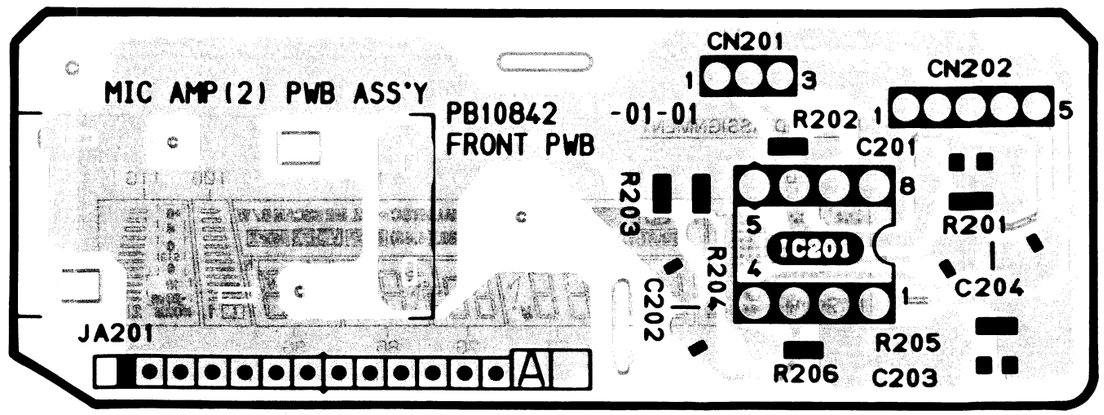
REF. No.	LOCATION
DIODE	
D13	7A
D14	7B
D15	2C
D16	2C
D22	1B

4.21 MIC AMP (1) & (2) SCHEMATIC DIAGRAMS

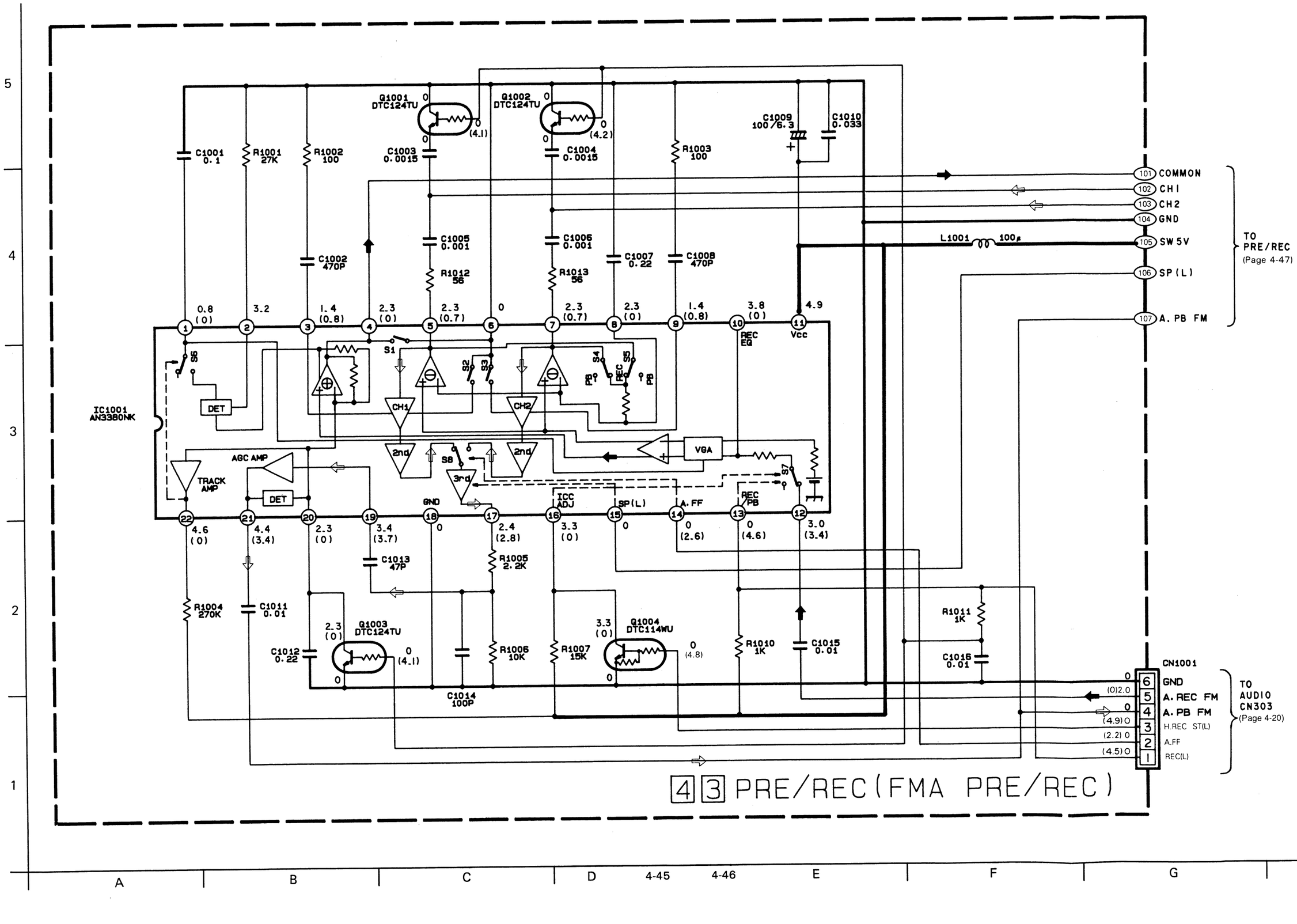


4.22 MIC AMP (1) & (2) CIRCUIT BOARDS

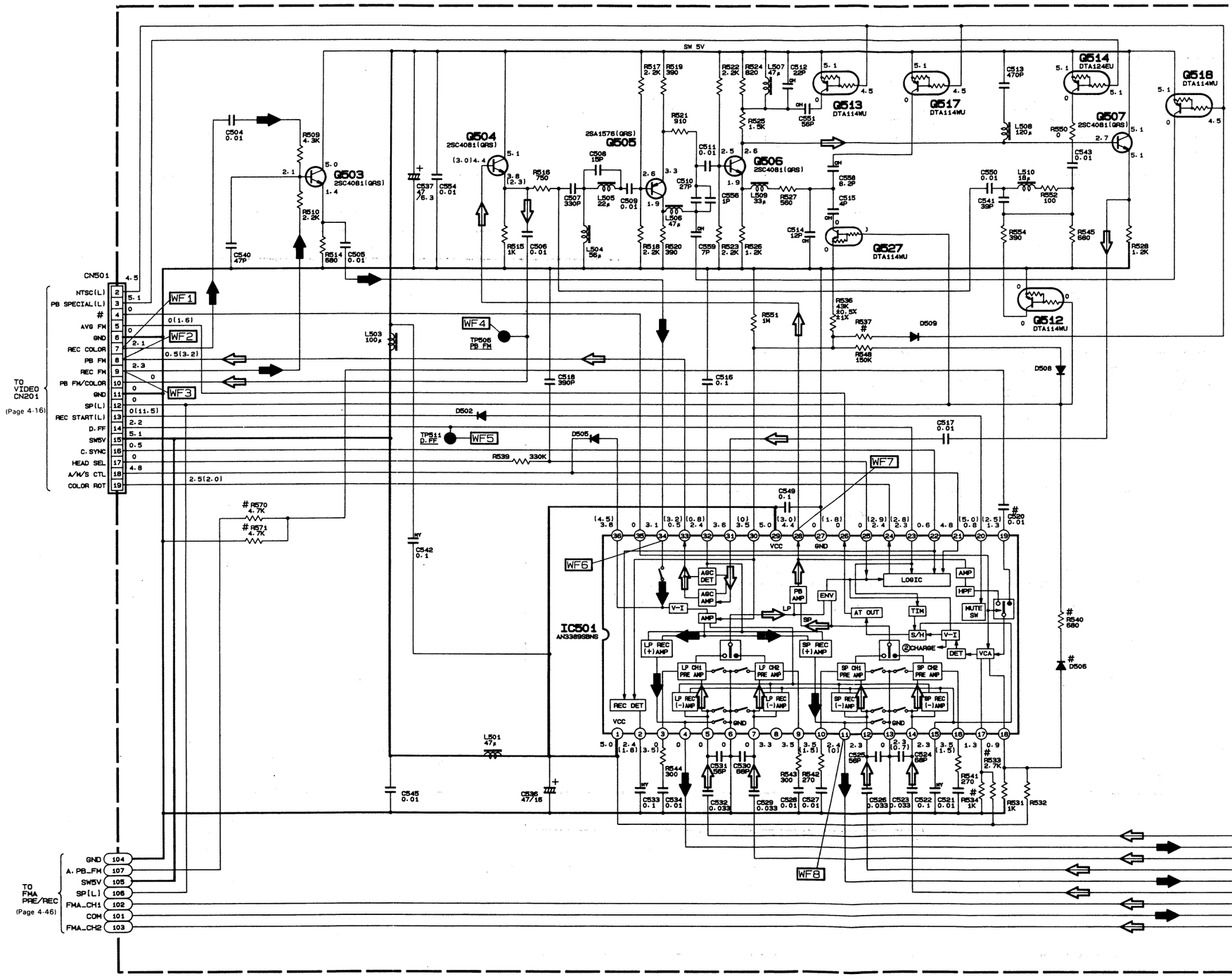




4.23 FMA PRE/REC SCHEMATIC DIAGRAM (HR-J71MS only)



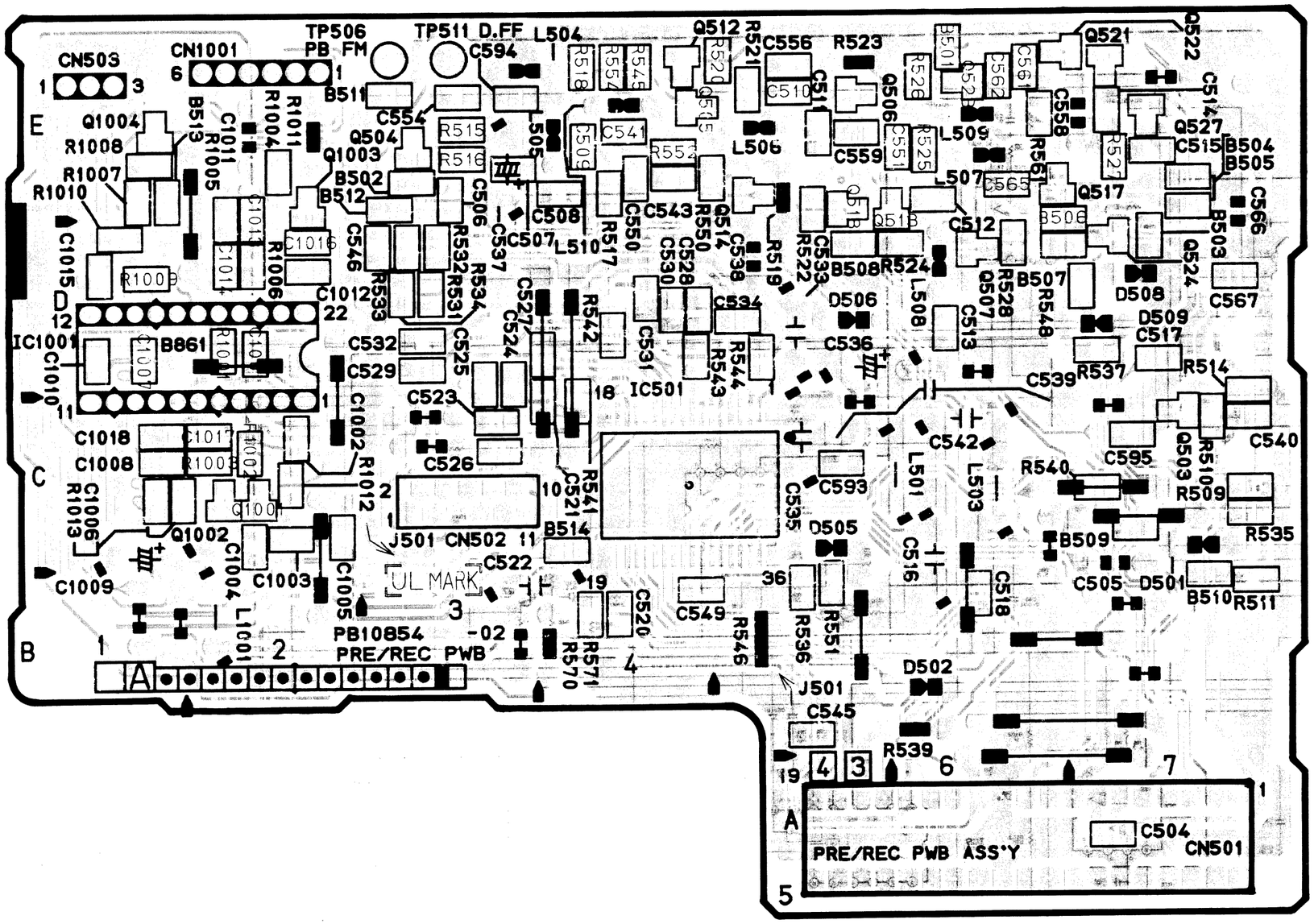
4.24 PRE/REC SCHEMATIC DIAGRAM



NOTE:
COMPARISON CHART OF MODELS & MARKS(#)

REF. NO.	MODELS	
	HR-J71MS	HR-J51MS
D506	USED	OPEN
R533	USED	OPEN
R537	150K	120K
R540	USED	OPEN
R570	USED	OPEN
R571	USED	OPEN
C520	USED	OPEN
CN501-4	VA SEL	NC
CN502	1-9	1-6

4.25 PRE/REC CIRCUIT BOARD



MAIN COMPONENT PARTS LOCATION GUIDE <PRE/REC PWB>

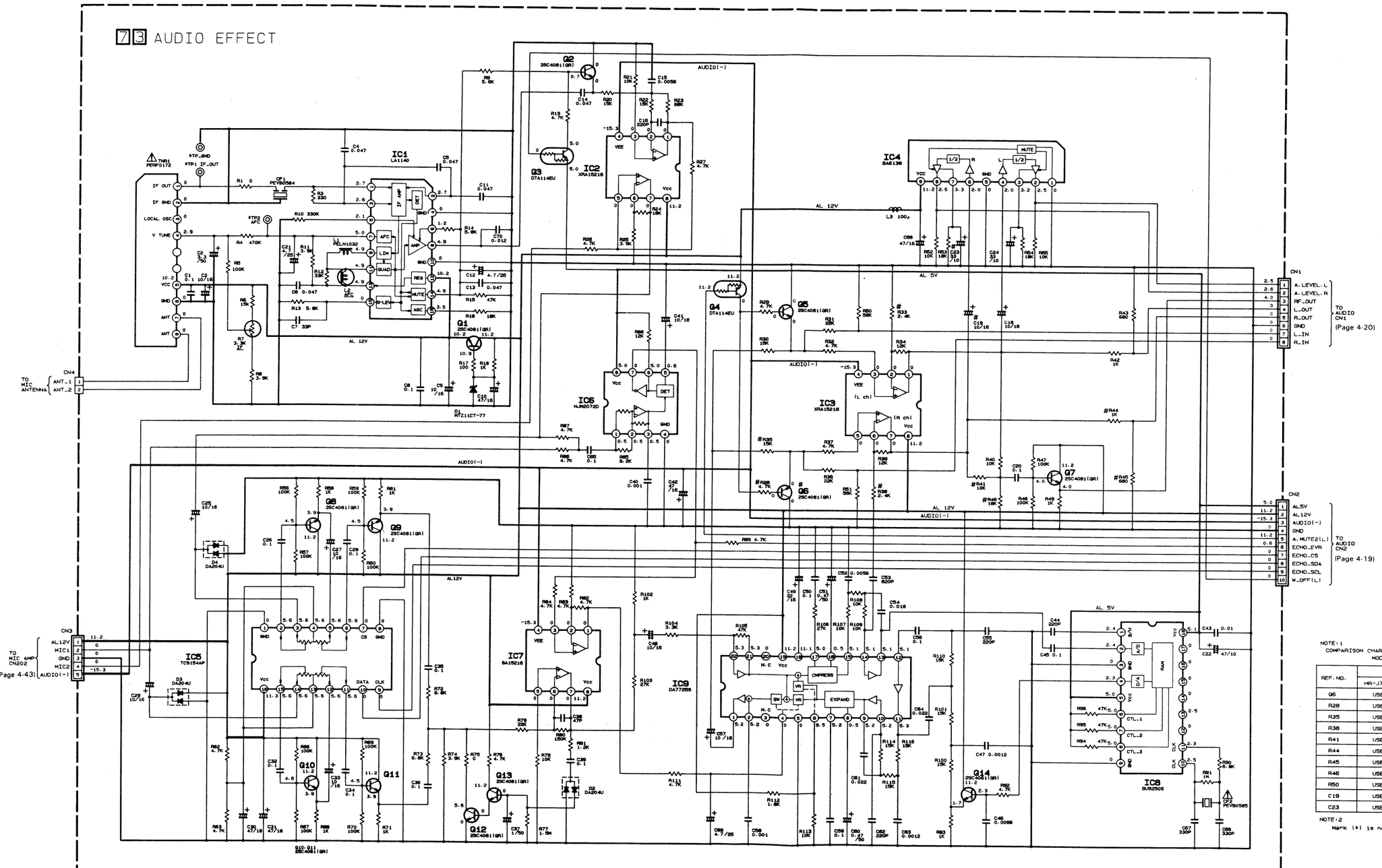
REF. No.	LOCATION
IC	
IC501	4C
IC1001	1D
TRANSISTOR	
Q503	7C
Q504	3E
Q505	4E
Q506	5E
Q507	6D
Q512	6D
Q513	5E
Q514	5E
Q517	6E
Q518	5E
Q527	7E
Q1001	2C
Q1002	2C
Q1003	2E
Q1004	1E
DIODE	
D502	7B
D505	5C
D506	5D
D508	7D
D509	7D
CONNECTOR	
CN501	7A
CN502	3C
CN1001	2E
TEST POINT	
TP506	3E
TP511	3E

LEADLESS COMPONENT PARTS LOCATION GUIDE <PRE/REC PWB>

REF. No.	LOCATION
IC	
IC501	4C
TRANSISTOR	
Q503	7C
Q504	3E
Q505	4E
Q506	5E
Q507	6D
Q512	6D
Q513	5E
Q514	5E
Q517	6E
Q518	5E
Q521	7E
Q522	7E
Q523	6E
Q524	7D
Q527	7E
Q1001	2C
Q1002	2C
Q1003	2E
Q1004	1E
RESISTOR	
R509	7C
R510	7C
R511	7B
R514	7D
R515	3E
R516	3E
R517	4D
R518	4E
R520	4E
R521	5E
R522	5D
R524	6D
R525	6E
R526	6E
R527	7E
R528	6D
R531	3D
R532	3D
R533	3D
R534	3D
R535	7C
R536	5B
R537	7D
R540	6C
R541	4C
R542	4D
R543	5D
R544	5D
R545	4E
R548	6D
R550	4D
R551	5B
R552	4E
R554	4E
R561	6E
R571	4B
R1001	2D
R1002	2C
R1003	2C
R1004	2E
R1005	2E
R1006	2D
R1007	1E
R1008	1E
R1009	1D
R1010	1E
R1012	1C
R1013	1C

REF. No.	LOCATION
CAPACITOR	
C504	7A
C506	3E
C507	3E
C508	4E
C509	4E
C510	5E
C511	5E
C512	6E
C513	6D
C514	7E
C515	7E
C517	7D
C518	6B
C520	4B
C521	4C
C523	3C
C524	3D
C525	3D
C526	3C
C527	3D
C528	4D
C529	3D
C530	4D
C531	4D
C532	3D
C534	5D
C540	7C
C541	4E
C543	4E
C545	5B
C546	3D
C549	4B
C550	4E
C551	6E
C554	3E
C556	5E
C559	5E
C561	6E
C562	6E
C565	6E
C567	7D
C593	5C
C594	3E
C595	7C
C1001	2D
C1002	2C
C1003	2C
C1004	2C
C1005	2C
C1006	1C
C1007	1D
C1008	1C
C1010	1D
C1012	2D
C1013	2D
C1014	2D
C1015	1D
C1016	2D
C1017	2C
C1018	1C

4.26 AUDIO EFFECT SCHEMATIC DIAGRAM



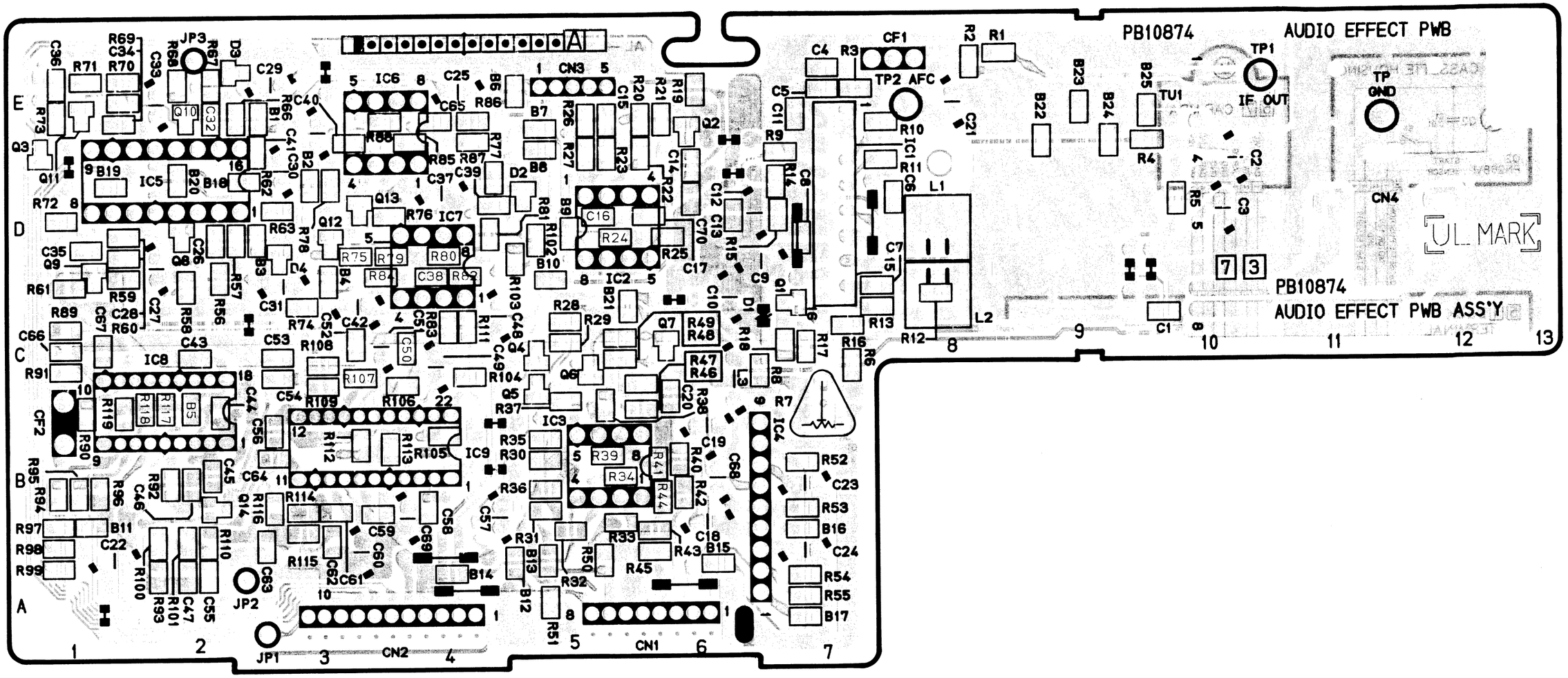
NOTE: 3
R7(IF) is users adjustment volume.
Please refer to EN-21 of INSTRUCTIONS.

NOTE: 1
COMPARISON CHART OF MODELS & MARKS(#)

REF. NO.	MODELS	
	HR-J71MS	HR-J51MS
Q6	USED	OPEN
R28	USED	OPEN
R35	USED	OPEN
R38	USED	OPEN
R41	USED	OPEN
R44	USED	OPEN
R45	USED	OPEN
R46	USED	OPEN
R50	USED	OPEN
C19	USED	OPEN
C23	USED	OPEN

NOTE: 2
Mark (*) is not used.

4.27 AUDIO EFFECT CIRCUIT BOARD



MAIN COMPONENT PARTS LOCATION GUIDE <AUDIO EFFECT PWB>

REF. No.	LOCATION
IC	
IC1	7E
IC2	5D
IC3	5B
IC4	7B
IC5	2D
IC6	3E
IC7	4D
IC8	2C
IC9	4B
TRANSISTOR	
Q1	7C
Q2	6E
Q3	1E
Q4	5C
Q5	5C
Q6	5C
Q7	6C
Q8	2D
Q9	1D
Q10	2E
Q11	1E
Q12	3D
Q13	3D
Q14	2B

REF. No.	LOCATION
DIODE	
D1	6C
D2	4D
D3	2E
D4	3D
CONNECTOR	
CN1	5A
CN2	3A
CN3	5E
CN4	11D
ADJUSTMENT	
R7	7C
L2	8C

LEADLESS COMPONENT PARTS LOCATION GUIDE <AUDIO EFFECT PWB>

REF. No.	LOCATION
TRANSISTOR	
Q1	7C
Q2	6E
Q3	1E
Q4	5C
Q5	5C
Q6	5C
Q7	6C
Q8	2D
Q9	1D
Q10	2E
Q11	1E
Q12	3D
Q13	3D
Q14	2B
DIODE	
D2	4D
D3	2E
D4	3D
RESISTOR	
R1	8E
R2	8E
R3	7E
R4	10E

REF. No.	LOCATION
RESISTOR	
R5	10D
R6	7C
R8	7C
R9	7E
R10	7E
R11	7E
R12	8C
R13	7C
R14	6B
R15	6D
R16	7C
R17	7C
R18	6C
R19	6E
R20	5E
R21	6E
R22	6D
R23	5E
R24	5D
R25	6D
R26	5E
R27	5E
R28	5C
R29	5C
R30	5B
R31	5B

REF. No.	LOCATION
RESISTOR	
R32	5A
R33	5B
R34	5B
R35	5B
R36	5B
R37	5C
R38	6B
R39	5B
R40	6B
R41	6B
R42	6B
R43	6B
R44	6B
R45	6A
R46	6C
R47	6C
R48	6C
R49	6C
R50	5A
R51	5A
R52	7B
R53	7B
R54	7A
R55	7A
R56	2C
R57	2D

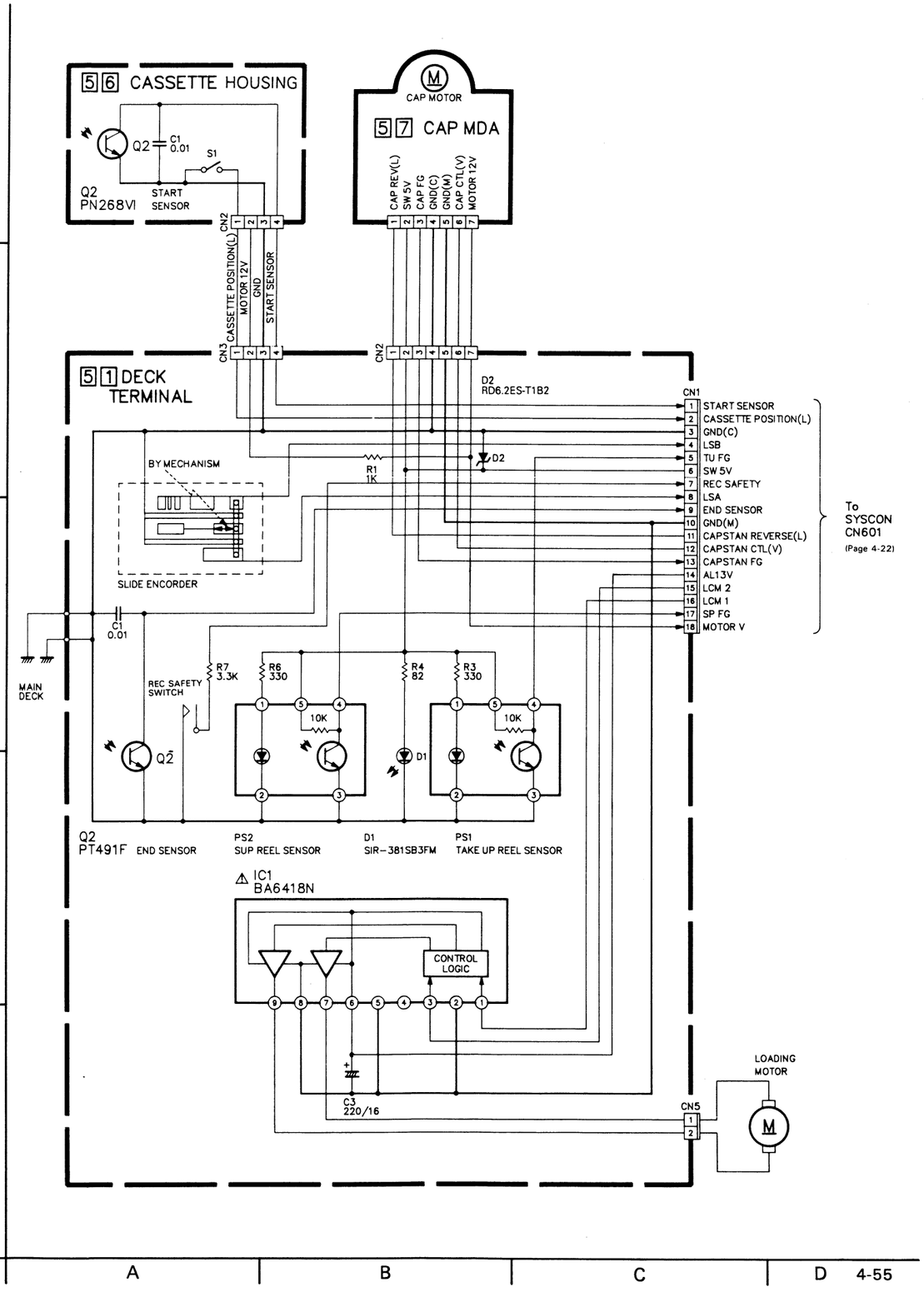
REF. No.	LOCATION
RESISTOR	
R58	2C
R59	1C
R60	1C
R61	1C
R62	3D
R63	3D
R66	3E
R67	2E
R68	2E
R69	1E
R70	1E
R71	1E
R72	1D
R73	1E
R74	3C
R75	3D
R76	4D
R77	4E
R78	3D
R79	3D
R80	4D
R81	4D
R82	4D
R83	4C
R84	3D
R85	4E

REF. No.	LOCATION
RESISTOR	
R86	4E
R87	4E
R88	3E
R89	1C
R90	1B
R91	1C
R92	2B
R93	2A
R94	1B
R95	1B
R96	1B
R97	1B
R98	1A
R99	1A
R100	2A
R101	2A
R102	5D
R103	4C
R104	4C
R105	4B
R106	4C
R107	3C
R108	3C
R109	3C
R110	2A
R111	4C

REF. No.	LOCATION
RESISTOR	
R112	3B
R113	4B
R114	3B
R115	3A
R116	3B
R117	2C
R118	2C
R119	1B
CAPACITOR	
C1	10C
C4	7E
C5	7E
C6	8D
C7	8D
C8	7D
C11	7E
C13	6D
C14	6E
C15	5E
C16	5D
C17	6D
C20	6C
C26	2D
C28	1C
C32	2E

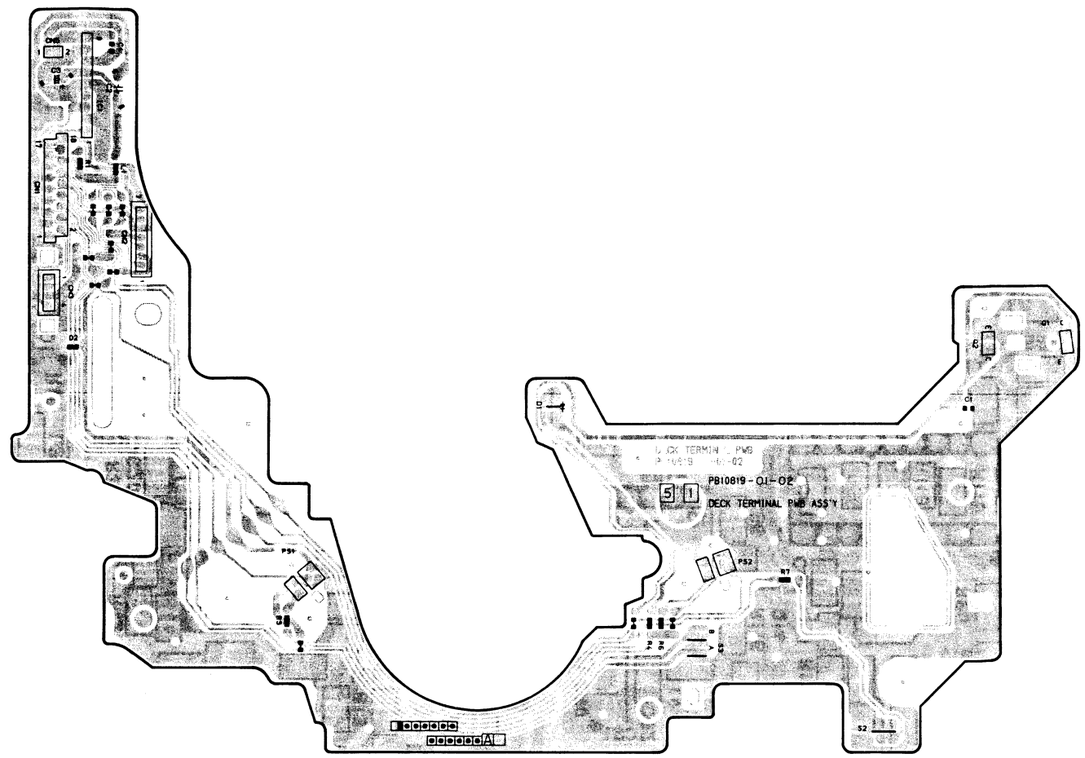
REF. No.	LOCATION
CAPACITOR	
C34	1E
C35	1D
C36	1E
C38	4D
C39	4D
C40	3E
C43	2C
C44	2C
C45	2B
C46	2B
C47	2A
C50	4C
C52	3C
C53	3C
C54	3C
C55	2A
C56	3B
C58	4B
C59	3B
C61	3A
C62	3A
C63	3A
C64	2B
C65	4E
C66	1C
C67	1C
C70	6D

4.28 DECK TERMINAL, CASSETTE HOUSING & CAPSTAN MDA SCHEMATIC DIAGRAMS

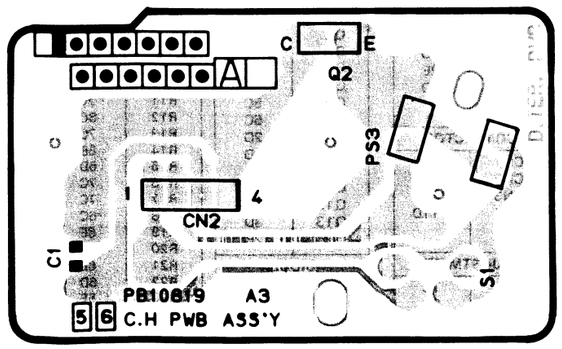


4.29 DECK TERMINAL, CASSETTE HOUSING & A/C HEAD CIRCUIT BOARD

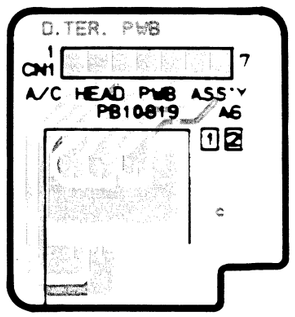
— DECK TERMINAL —



— CASSETTE HOUSING —

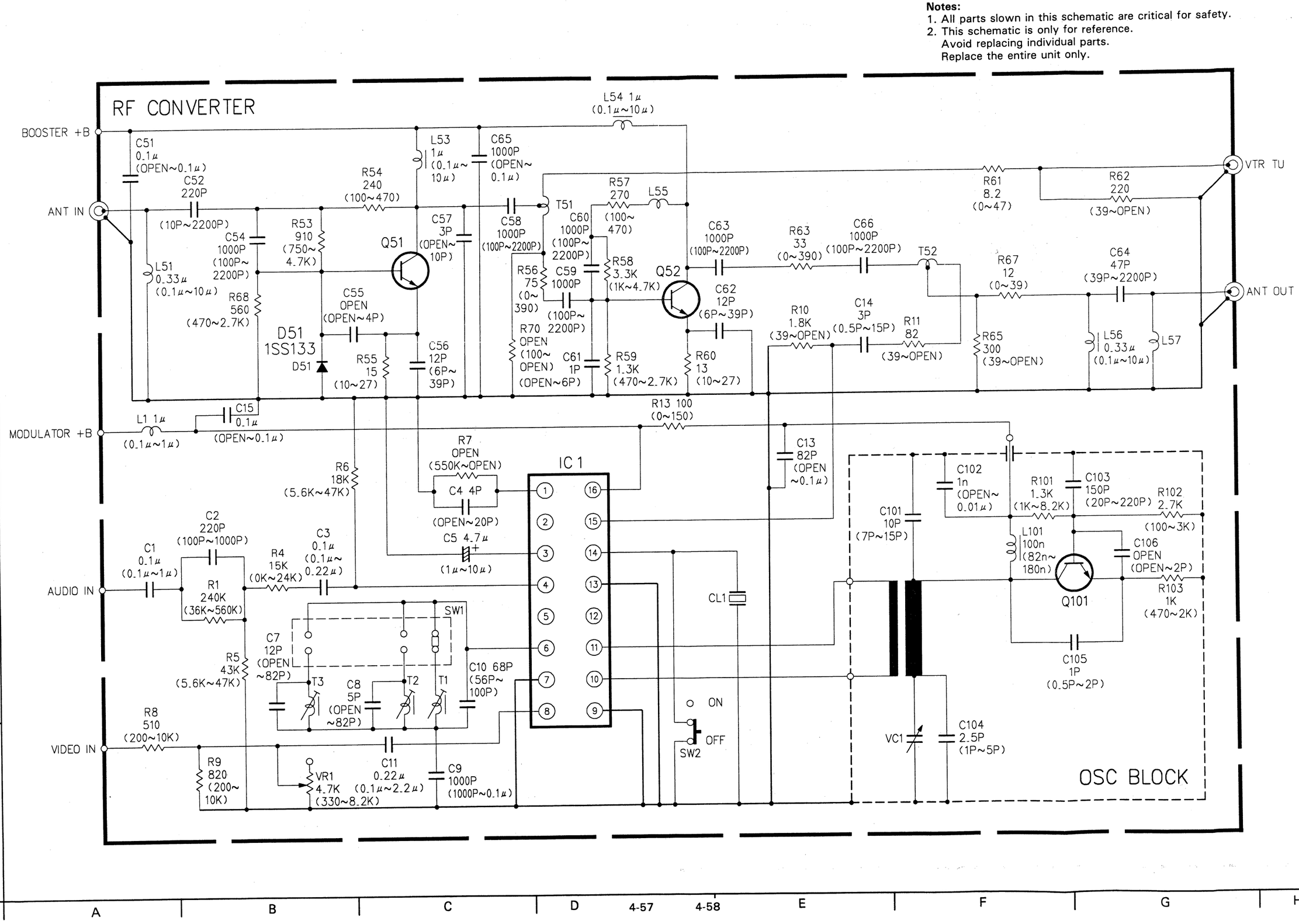


— A/C HEAD —



4.30 RF CONVERTER SCHEMATIC DIAGRAM

Notes:
1. All parts slown in this schematic are critical for safety.
2. This schematic is only for reference.
   Avoid replacing individual parts.
   Replace the entire unit only.

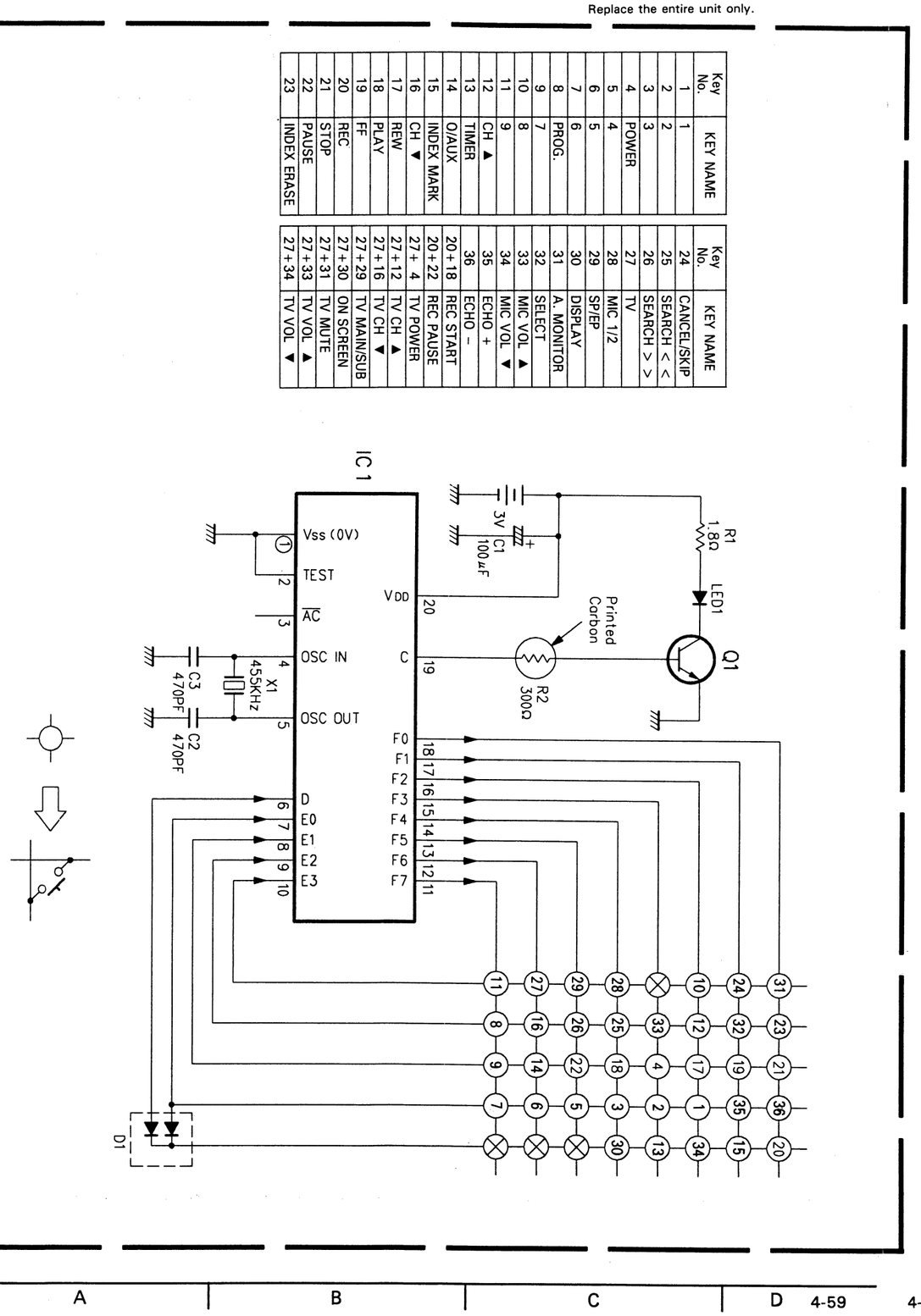


4.31 REMOTE CONTROL SCHEMATIC DIAGRAM

Notes:
1. All parts slown in this schematic are critical for safety.
2. This schematic is only for reference.
   Avoid replacing individual parts.
   Replace the entire unit only.

Key No.	KEY NAME
1	1
2	2
3	3
4	POWER
5	4
6	5
7	6
8	PROG.
9	7
10	8
11	9
12	CH ▲
13	TIMER
14	O/AUX
15	INDEX MARK
16	CH ▼
17	REW
18	PLAY
19	FF
20	REC
21	STOP
22	PAUSE
23	INDEX ERASE

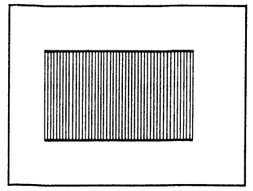
Key No.	KEY NAME
24	CANCEL/SKIP
25	SEARCH < <
26	SEARCH > >
27	TV
28	MIC 1/2
29	SP/EP
30	DISPLAY
31	A. MONITOR
32	SELECT
33	MIC VOL ▲
34	MIC VOL ▼
35	ECHO +
36	ECHO −
20+18	REC START
20+22	REC PAUSE
27+ 4	TV POWER
27+12	TV CH ▲
27+16	TV CH ▼
27+29	TV MAIN/SUB
27+30	ON SCREEN
27+31	TV MUTE
27+33	TV VOL ▲
27+34	TV VOL ▼



4.32 WAVEFORMS

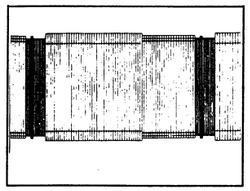
—VIDEO—

WF1 JP202-5 REC FM



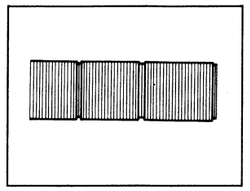
REC 0.7 Vp-p
20 mV/2 msec/DIV

WF2 JP202-6 PB FM



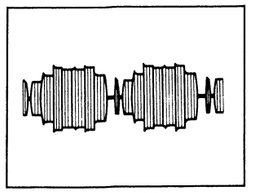
PAL PB 0.36 Vp-p
10 mV/5 msec/DIV

WF2 JP202-6 PB FM



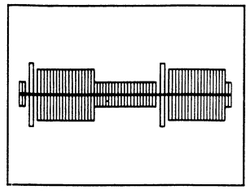
SECAM PB 0.35 Vp-p
10 mV/10 µsec/DIV

WF3 JP202-11 REC COLOR



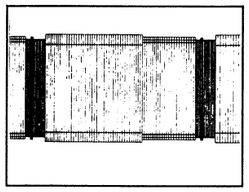
PAL REC 0.25 Vp-p
10 mV/10 µmsec/DIV

WF3 JP202-11 REC COLOR



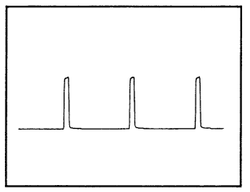
SECAM REC 0.2 Vp-p
10 mV/5 msec/DIV

WF4 JP202-12 PB FM/COLOR



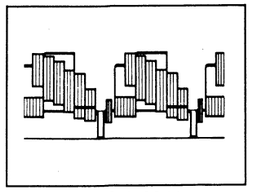
PB 0.5 Vp-p
20 mV/5 msec/DIV

WF5 JP212 C. SYNC



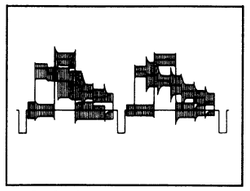
REC 4.5 Vp-p
0.2 V/20 µsec/DIV

WF6 JP203-6 AUX IN



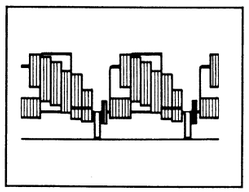
PAL REC 0.68 Vp-p
20 mV/20 µsec/DIV

WF6 JP203-6 AUX IN



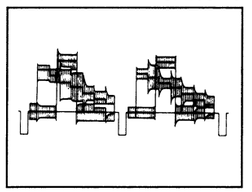
SECAM REC 0.56 Vp-p
20 mV/20 µsec/DIV

WF7 JP203-10



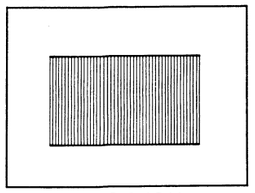
PAL REC/PB 2.3 Vp-p
0.1 V/20 µsec/DIV

WF7 JP203-10



SECAM REC/PB 2.2 Vp-p
0.1 V/20 µsec/DIV

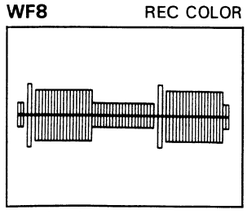
WF8 CN201-7 REC COLOR



PAL REC 0.18 Vp-p
5 mV/20 µsec/DIV

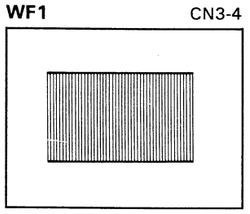
—AUDIO—

WF8 CN201-7 REC COLOR



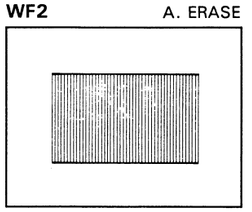
SECAM REC 0.15 mVp-p
5 mV/10 msec/DIV

WF1 CN3-4



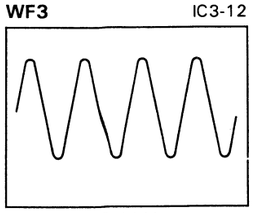
REC 45.0 Vp-p
1 V/1 msec/DIV

WF2 TP33 A. ERASE



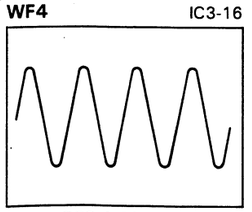
REC 36.0 Vp-p
1 V/1 msec/DIV

WF3 IC3-12



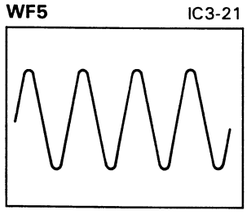
PB 0.11 Vp-p
5 mV/1 msec/DIV

WF4 IC3-16



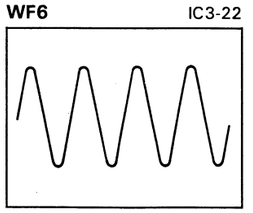
REC 0.26 Vp-p
10 mV/1 msec/DIV

WF5 IC3-21



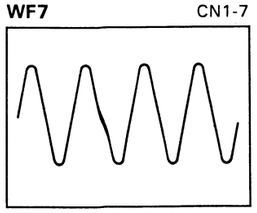
REC 3.4 Vp-p
0.1 V/1 msec/DIV

WF6 IC3-22



REC/PB 2.6 Vp-p
0.1 V/1 msec/DIV

WF7 CN1-7



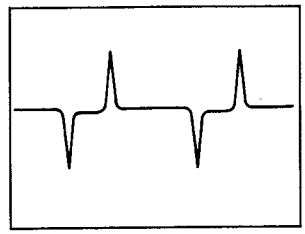
REC/PB 1.2 Vp-p
50 mV/1 msec/DIV

—SERVO—

WF8 TP63 PB FM

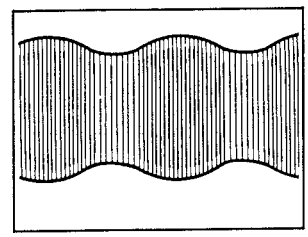
PB 0.55 Vp-p
50 mV/1 msec/DIV

WF1 TP401 CTL PULSE



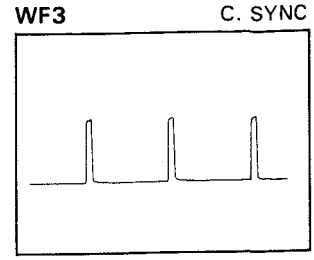
PB 2.8 Vp-p
0.1 V/5 msec/DIV

WF2 IC401-38 CAP. FG



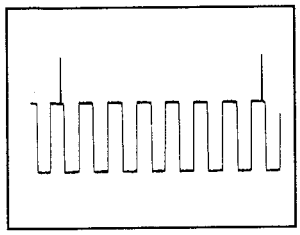
REC 1.8 Vp-p
0.1 V/10 msec/DIV

WF3 IC401-49 C. SYNC



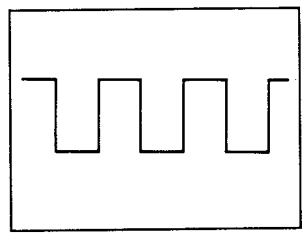
REC 4.4 Vp-p
0.2 V/20 μsec/DIV

WF4 IC401-8 D. PG/FG



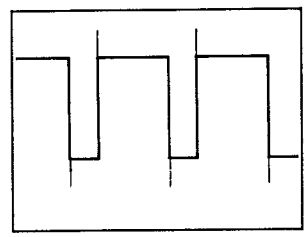
REC/PB 4.2 Vp-p
0.1 V/10 msec/DIV

WF5 TP411 D. FF



REC/PB 2.8 Vp-p
0.1 V/10 msec/DIV

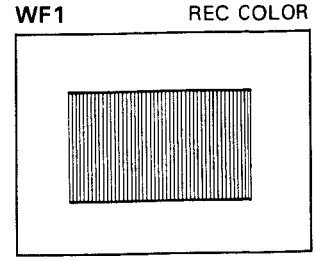
WF6 IC401-29



REC 6.0 Vp-p
0.2 V/10 msec/DIV

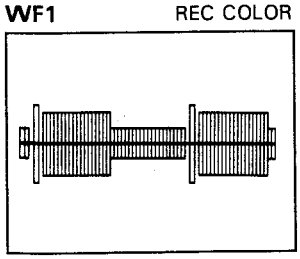
—PRE/REC—

WF1 CN501-7 REC COLOR



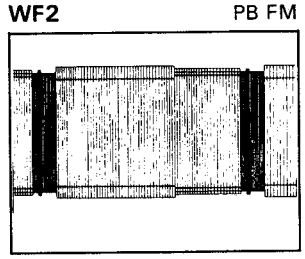
PAL REC 0.18 Vp-p
5 mV/20 μsec/DIV

WF1 CN501-7 REC COLOR



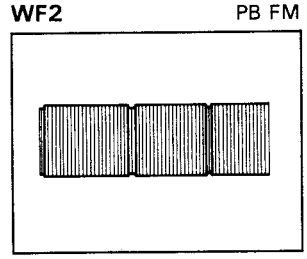
SECAM REC 0.15 mVp-p
5 mV/20 μsec/DIV

WF2 CN501-8 PB FM



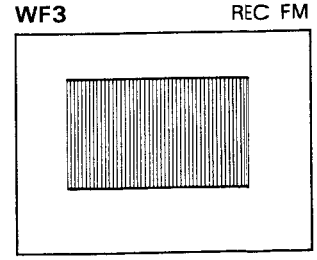
PAL PB 0.36 Vp-p
10 mV/5 msec/DIV

WF2 CN501-8 PB FM



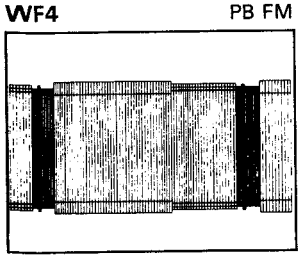
SECAM PB 0.35 Vp-p
10 mV/5 msec/DIV

WF3 CN501-9 REC FM



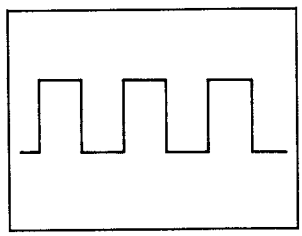
REC 0.7 Vp-p
20 mV/2 msec/DIV

WF4 TP506 PB FM



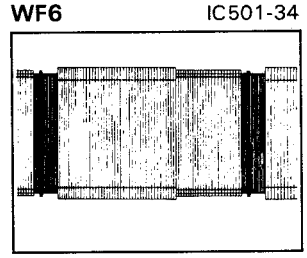
PB 0.54 Vp-p
20 mV/5 msec/DIV

WF5 TP511 D. FF



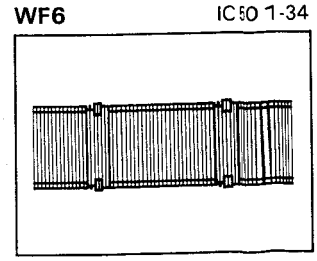
REC/PB 2.8 Vp-p
0.2 V/10 msec/DIV

WF6 IC501-34



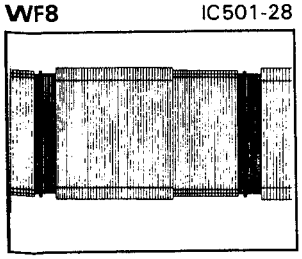
PAL REC 0.24 Vp-p
10 mV/5 msec/DIV

WF6 IC501-34



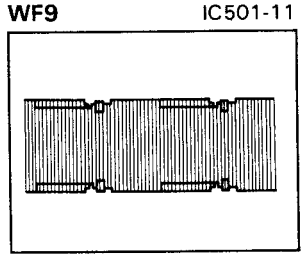
SECAM REC 0.22 Vp-p
10 mV/5 msec/DIV

WF8 IC501-28



PB 0.52 Vp-p
20 mV/5 msec/DIV

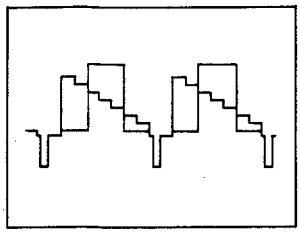
WF9 IC501-11



REC 2.2 Vp-p
0.1 V/10 msec/DIV

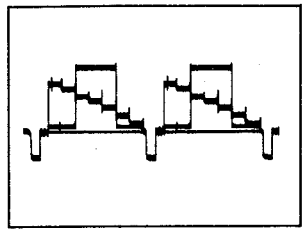
—VIDEO UNIT—

WF1 IC2-11



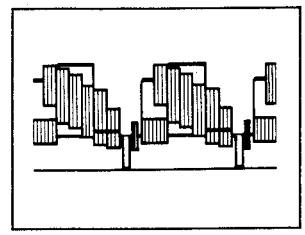
REC 0.52 Vp-p
20 mV/20 μsec/DIV

WF2 IC2-12



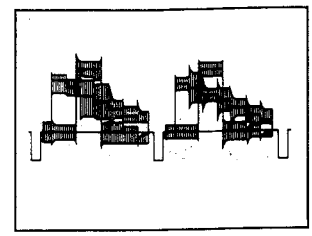
PB 0.13 Vp-p
5 mV/20 μsec/DIV

WF3 IC2-14



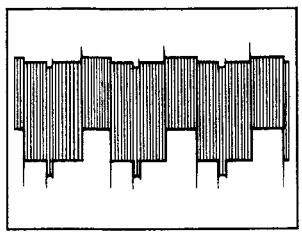
PAL REC 1.2 Vp-p
50 mV/20 μsec/DIV

WF3 IC2-14



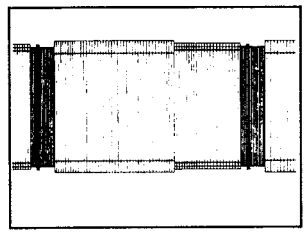
SECAM REC 1.2 Vp-p
50 mV/20 μsec/DIV

WF3 IC2-14



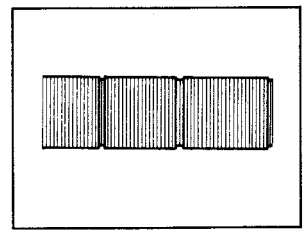
PB 1.1 Vp-p
20 mV/20 μsec/DIV

WF4 IC2-16



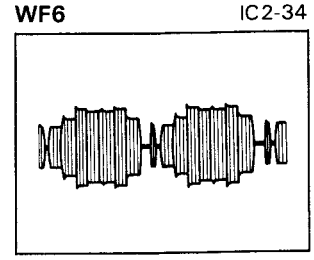
REC 1.4 Vp-p
50 mV/5 msec/DIV

WF5 IC2-19



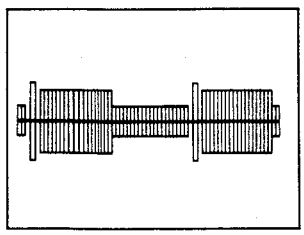
PAL PB 0.36 Vp-p
SECAM PB. 0.4 Vp-p
10 mV/5 msec/DIV

WF6 IC2-34



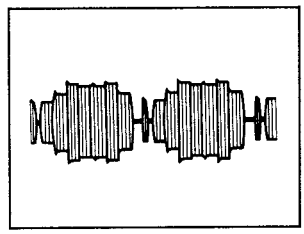
PAL REC 0.4 Vp-p
20 mV/20 μsec/DIV

WF6 IC2-34



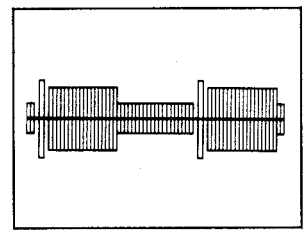
SECAM REC 0.4 Vp-p
20 mV/20 μsec/DIV

WF7 IC2-41



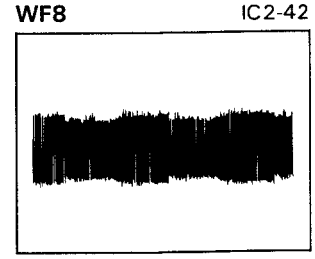
PAL PB 0.12 Vp-p
5 mV/20 μsec/DIV

WF7 IC2-41



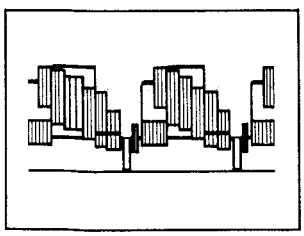
SECAM PB 0.1 Vp-p
5 mV/5 msec/DIV

WF8 IC2-42



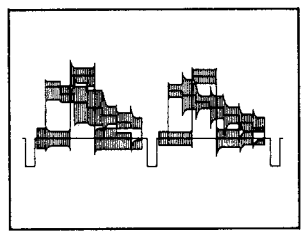
REC 0.03 Vp-p
5 mV/5 msec/DIV

WF9 IC2-58



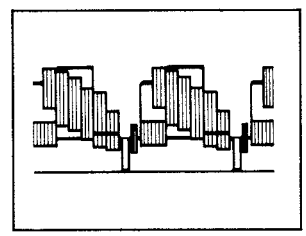
REC 0.72 Vp-p
20 mV/20 μsec/DIV

WF9 IC2-58



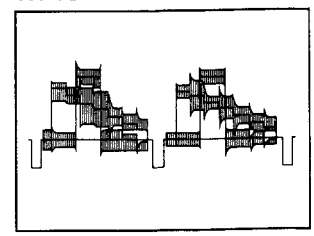
REC 0.6 Vp-p
20 mV/20 μsec/DIV

WF10 IC2-62



PAL REC/PB 2.4 Vp-p
0.1 V/20 μsec/DIV

WF10 IC2-62



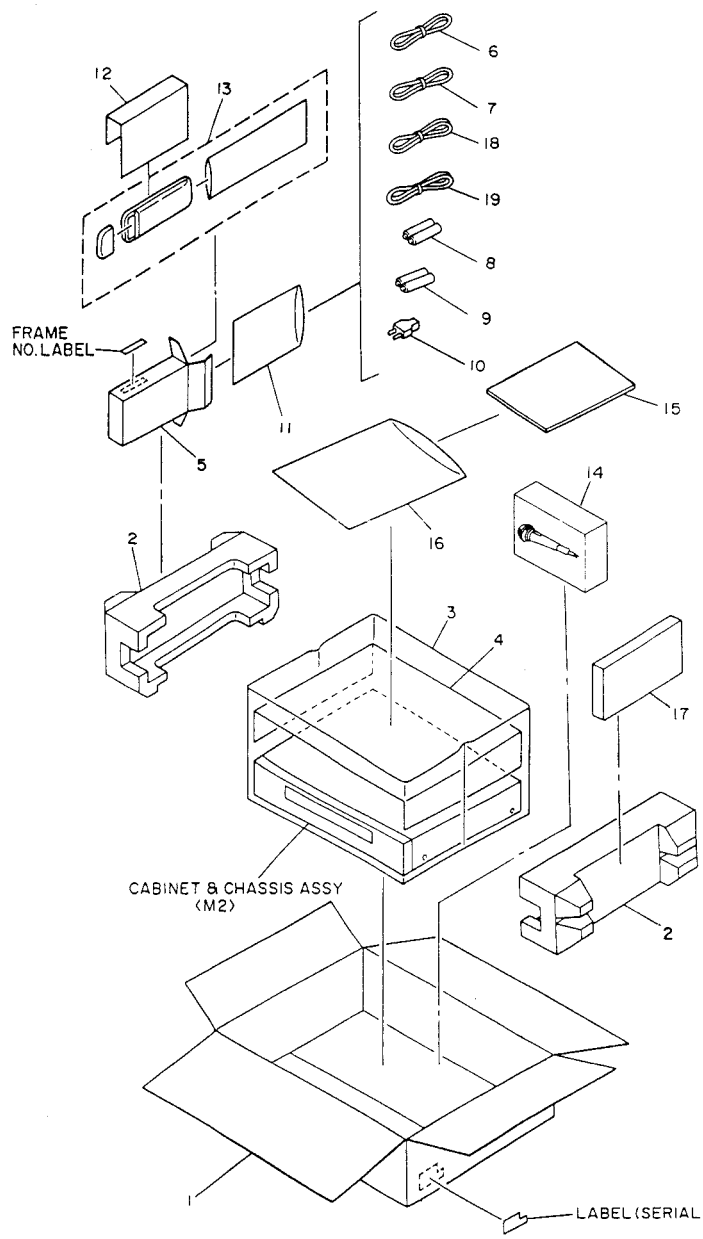
SECAM REC/PB 2.8 Vp-p
0.1 V/20 μsec/DIV

SECTION 5
PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

5.1 PACKING AND ACCESSORY ASSEMBLY <M1>



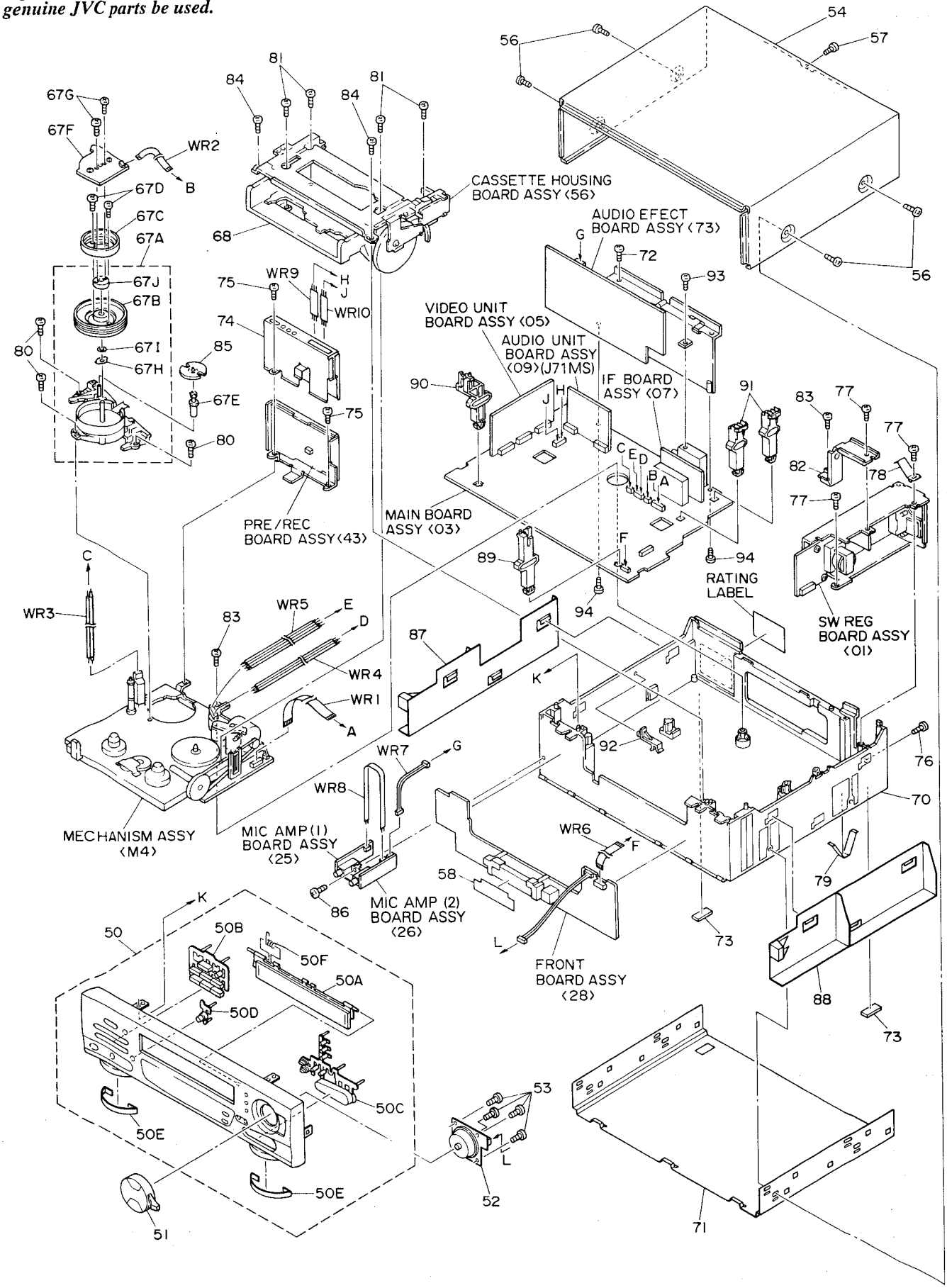
#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
**********			
		PACKING AND ACCESSORY ASSEMBLY <M1>	
	1	PQ35171	PACKING CASE,J71MS
		PQ35171-2	PACKING CASE,J51MS
	2	PQ35172A-1	CUSHION ASSY
	3	PQM30021-91	POLY BAG
	4	PQ41026-38	PROTECT SHEET
	5	PQ34715-7	CASE,ACCESSORY
⚠	6	QMP40E0-183	POWER CORD
	7	PU59168-7	RF CABLE(AERIAL CABLE)
	8	R6PRPA-2ST	BATTERY,X2
	9	R03BPA-2ST	BATTERY,X2

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
⚠	10	PEMC1012-02	CONVERSION PLUG
	11	QPGA020-02005	POLY BAG
	12	PQ34834	SHEET
⚠	13	PQ21674G	REMOTE CONTROLLER
⚠	14	PEAC0339	MICROPHONE(INCL. SCREW)RIVER,FEEDER CABLE, CONNECTOR CABLE ANTENNA CABLE)
⚠	15	PU30425-1529	INSTRUCTIONS
	16	QPGA025-03505	POLY BAG
	17	PQ33684-4	VHS CAS TAPE
	18	PU56142-3	PIN CORD ASSY,(AUDIO CABLE) J71 MS
	19	PU59205-3	PIN JACK CABLE,(VIDEO CABLE) J71MS

5.2 CABINET AND CHASSIS ASSEMBLY <M2>

BEWARE OF BOGUS PARTS

Parts that do not meet specifications may cause trouble in regard to safety and performance. We recommend that genuine JVC parts be used.

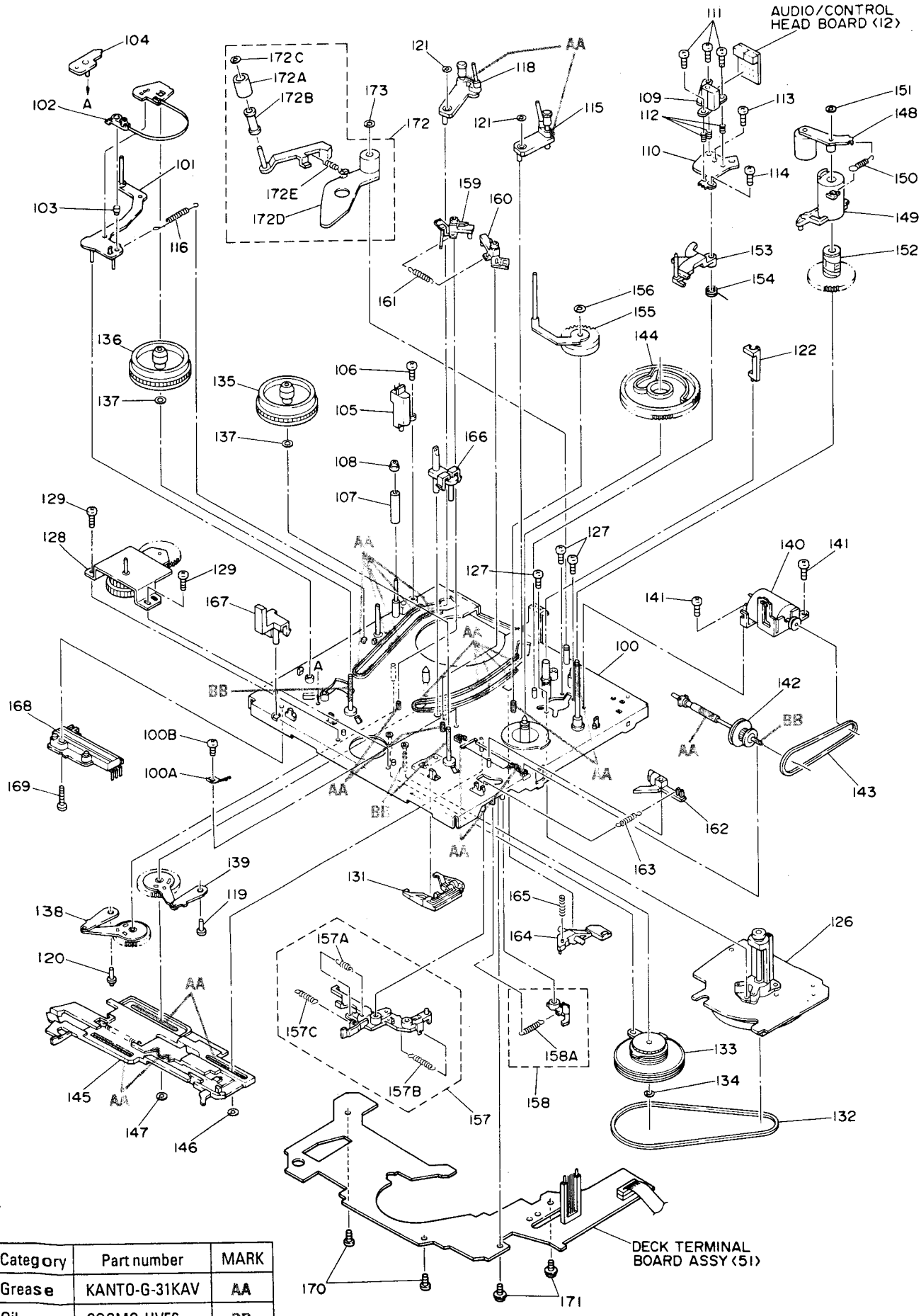


CABINET AND CHASSIS ASSEMBLY <M2>

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	50	PQ11680A	FRONT PANEL ASSY,J71MS
		PQ11680B	FRONT PANEL ASSY,J51MS
	50A	PQ21633-13	CASSETTE DOOR,J71MS
		PQ21633-15	CASSETTE DOOR,J51MS
	50B	PQ21637-5	BUTTON(1),J51MS
		PQ21637-8	BUTTON(1),J71MS
	50C	PQ21638-10	BUTTON(2),J71MS
		PQ21638-11	BUTTON(2),J51MS
	50D	PQ34915	BUTTON(3)
	50E	PQ46279	PLATE(FOOT),X2
	50F	PQ46414	TORSION SPRING
	51	PQ35162-1-2	KNOB(JOG),J71MS
		PQ35162-2-2	KNOB(JOG),J51MS
	52	PESW0666	SHUTTLE SWITCH
	53	SDSF2606Z	SCREW,X4 SHUTTLE SWITCH
⚠	54	PQ11624-2	TOP COVER,J51MS
⚠		PQ11624-5	TOP COVER,J71MS
	56	PQ43827	SPECIAL SCREW,X4 TOP COVER
	57	SDSF3008M	SCREW,TOP COVER
	58	PQ46365	FILTER(FDP)
	67A	PDM2232AF	DRUM SUB ASSEMBLY,J51MS
		PDM2232W	DRUM SUB ASSY,J71MS
	67B	PDM3353U	UPPER DRUM ASSEMBLY,J51MS
		PDM3353Y	UPPER DRUM ASSY,J71MS
	67C	PDZ0141-2	ROTOR ASSEMBLY
	67D	SPSH2660Z	SCREW,X2
	67E	PDM4311A-1	ROLLER ASSEMBLY
⚠	67F	PDZ0141	STATOR ASSEMBLY
	67G	SPSP2606Z	SCREW,X2
	67H	PDM4343A	BRUSH ASSEMBLY
	67I	PDM4050-9	WASHER
	67J	PDM4345A	COLLAR ASSEMBLY
	68	PUS29672C-1	CASSETTE HOUSING ASSY

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
⚠	70	PQ11622-1-10	BOTTOM CHASSIS
⚠	71	PQ11625-2-1	BOTTOM COVER
	72	SDSF3010Z	SCREW,TERMINAL
	73	PQ43013-5	FOOT,X2
	74	PQ21513-1-1	SHIELD CASE,PRE/REC
	75	SDSG2606Z	SCREW,X2 PRE/REC
	76	SDSB3008M	SCREW,INLET
	77	SDSF3010Z	SCREW,X3 SW REG
	78	PQ46139	EARTH PLATE
	79	PQ34737	EARTH PLATE
	80	SPST2610Z	SCREW,X3 DRUM
	81	SDST2608Z	SCREW,X4 CASSETTE HOUSING
	82	PQ35010	BRACKET(M.DECK)
	83	PQ43831	SPECIAL SCREW,X2 MECHA
	84	SDSF3010Z	SCREW,X2 CASSETTE HOUSING
	85	PQ45160	INERTIA PLATE
	86	SDSF3010Z	SCREW
	87	PQ21647	INNER PIECE(L)
	88	PQ21648	INNER PIECE(R)
	89	PEME0938	HOLDER (PWB),CASS.HOUSING
	90	PEME0942	HOLDER (MAIN),CASS.HOUSING
	91	PEME0943-01-01	HOLDER (REG.),X2 TERMINAL BKT
	92	PQ34691	PWB HOLDER,VIDEO UNIT
	93	SDST3005Z	SCREW,A EFFECT
	94	SDSF3008Z	SCREW,X2 TERMINAL
	WR1	PW30802-1824	FFC WIRE,D.TERMINAL
	WR2	PW30803-0422	FFC,DRUM
	WR3	PW30701-36AAYY	WIRE,FF
	WR4	PW30702-12AAYY	WIRE,CTL
	WR5	PW30705-12AAYY	WIRE,AUDIO
	WR6	PW30802-0913	FFC WIRE,FRONT
	WR7	PW30202-05D34	WIRE,A EFFECT
	WR8	PW30702-14AAYY	WIRE,MIC
	WR9	PW30101-L0HH883	WIRE,PRE/REC J71MS
	WR10	PW30702-22AAYY	WIRE,PRE/REC J71MS

5.3 MECHANISM ASSEMBLY <M4>



Category	Part number	MARK
Grease	KANTO-G-31KAV	AA
Oil	COSMO-HV56	BB

NOTE: The section marked in AA and BB indicate lubrication and greasing areas.

MECHANISM ASSEMBLY <M4>

#△	REF No.	PART No.	PART NAME, DESCRIPTION
	100	PQ20650K-33	MAIN DECK ASSEMBLY
	100A	PQ43849	EARTH PLATE
	100B	SPST2604Z	SCREW
	101	PQ43497K	TENSION ARM ASSY
	102	PQ45023A-1	TENSION BAND ASSY
	103	PQ43503-1-4	ADJUST PIN
	104	PQ44246	TENSION BAND BRACKET-3
	105	PEHE0237	FULL ERASE HEAD
	106	SDSF2614Z	SCREW,FULL ERASE HEAD
	107	PQ43505-1-1	ROLLER
	108	PQ43506	GUIDE POLE CAP
	109	PEHE0182	AUDIO CONTROL HEAD
	110	PQ43509	HEAD BASE
	111	PQ43687A	SPECIAL SCREW,X3
	112	PQM30002-192	COMPRESSION SPRING,X3
	113	SPSF2608M	SCREW
	114	SPSP2606Z	SCREW
	115	PU61103-2-7	POLE BASE ASSY(TAKE-UP)
	116	PQ43500	TENSION SPRING
	118	PU61151-2-6	POLE BASE ASSY(SUPPLY)
	119	PQ45895	STOPPER(T)
	120	PQ45894	STOPPER(S)
	121	PQM30017-41	SLIT WASHER,X2
	122	PQ43675-1-5	TAPE GUARD
△	126	PU61285	CAPSTAN MOTOR
	127	SPSG2608Z	SCREW,X3
	128	PU60618-1-3	IDLER GEAR UNIT
	129	SPST2606Z	SCREW,X2
	131	PQ43532B-4	CHANGE LEVER ASSEMBLY
	132	PQM30003-24	TIMER BELT
	133	PU60953-1-6	CLUTCH UNIT
	134	PQM30017-8	SLIT WASHER
	135	PQ46072A	REEL DISK ASSY,(TAKE-UP)
	136	PU60859-1-4	REEL DISK (SUPPLY)
	137	PQM30018-54	SPACER,X2
	138	PQ43537B	LOADING ARM ASSY (SUPLLY)
	139	PQ43542D-4	LOADING ARM ASSY(TAKE-UP)
	140	PQ43676B-5	LOADING MOTOR ASSY
	141	SPST2606Z	SCREW,X2
	142	PQ43548A-2	WORM CLUTCH ASSY
	143	PQM30003-23	BELT
	144	PQ32413-1-6	CONTROL CAM
	145	PQ43555C-10	PLATE ASSY
	146	PQM30017-12	SLIT WASHER
	147	PQM30017-8	SLIT WASHER
	148	PQ43523C	PINCH ROLLER LEVER ASSY
	149	PQ32415	PINCH ROLLER PRESS LEVER
	150	PQM30001-233	TENSION SPRING
	151	PQM30017-13	SLIT WASHER
	152	PQ32416-2	PINCH ROLLER CAM
	153	PQ43567A-13	GUIDE ARM ASSY
	154	PQ43569-1-3	TORSION SPRING
	155	PQ45073B	HALF LOADING GEAR ASSY
	156	PQM30017-13	SLIT WASHER
	157	PQ43575A-7	CANCELL LEVER ASSY
	157A	PQM30001-273	TENSION SPRING
	157B	PQM30001-237	TENSION SPRING
	157C	PQM30001-274	TENSION SPRING
	158	PQ43578A-2	HOOK ASSY
	158A	PQM30001-238	TENSION SPRING
	159	PQ43581D	MAIN BRAKE ASSY(SUPPLY)
	160	PQ43582C	MAIN BRAKE ASSY(TAKE UP)
	161	PQM30001-251	TENSION SPRING
	162	PQ43583A-3	SUB BRAKE ASSY (TAKE UP)
	163	PQM30001-235	TENSION SPRING
	164	PQ43584A-5	CAPSTAN BRAKE ASSY
	165	PQM30002-201	COMPRESSION SPRING
	166	PQ21546	LED PRISM
	167	PU61281	REC SAFETY SWITCH
	168	PU60622-1-2	SLIDE SWITCH
	169	SDSF2614Z	SCREW
	170	SDST2616Z	SCREW,X2
	171	GPSF2608Z	SCREW,X2
	172	PQ46016B-3	CLEANER ASSY
	172A	PQ46019	CLEANER
	172B	PQ46018	CLEANER ROLLER
	172C	PQM30017-38	SLIT WASHER
	172D	PQ34677-1-3	CLEANER LEVER
	172E	PQ46155-1-2	TORSION SPRING
	173	PQM30017-32	SLIT WASHER

5.4 ELECTRICAL PARTS LIST

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
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SWITCHING REGULATOR BOARD ASSY <01>

PWBA	PB20651D	SW.REG BOARD ASSY	
Q1	2SK2043-CB14	FE TRANSISTOR	
Q2	2SC3616(ML)	TRANSISTOR	
Q31	2SC1740S(RS)	TRANSISTOR	
D1	10E6-F2	DIODE	
D2	10E6-F2	DIODE	
D3	10E6-F2	DIODE	
D4	10E6-F2	DIODE	
D6	1SS133	DIODE	
	or MA165	DIODE	
D7	UZ27BSB	ZENER DIODE	
	or MTZ27BT-77	ZENER DIODE	
	or RD27ES-T1B2	DIODE	
D8	1SS133	DIODE	
	or MA165	DIODE	
D9	AU01	FR DIODE	
	or ERA18-04-T2	FR DIODE	
	or 1SR153-400-T2	FR DIODE	
D10	AU01	FR DIODE	
	or ERA18-04-T2	FR DIODE	
	or 1SR153-400-T2	FR DIODE	
D11	RD6.2ES-T1B1	ZENER DIODE	
	or UZ6.2BSA	ZENER DIODE	
	or MTZV6.2A	ZENER DIODE	
D31	AU01Z	FR DIODE	
	or ERA18-02-T2	FR DIODE	
	or 1SR153-200-T2	FR DIODE	
D32	RL2Z-LFB2	FR DIODE	
D33	RL2Z-LFB2	FR DIODE	
D35	AU01Z	FR DIODE	
	or ERA18-02-T2	FR DIODE	
D36	AK04	DIODE	
	or 11EQS04	SB DIODE	
D37	AU01Z	FR DIODE	
	or ERA18-02-T2	FR DIODE	
	or 1SR153-200-T2	FR DIODE	
D38	1SS133	DIODE	
	or MA165	DIODE	
D40	RD15ES-T1B1	ZENER DIODE	
	or UZ15BSA	DIODE	
D41	RD6.2ES-T1B3	ZENER DIODE	
	or MTZV6.2C	ZENER DIODE	
	or UZ6.2BSC	ZENER DIODE	
D42	RD30ES-T1B1	ZENER DIODE	
	or UZ30BSA	ZENER DIODE	
	or MTZ30AT-77	ZENER DIODE	
D43	1SS133	DIODE	
	or MA165	DIODE	
R4	QRD161J-334	RESISTOR	330kΩ,1/6W
R5	QRD161J-334	RESISTOR	330kΩ,1/6W
R6	QRD161J-102	RESISTOR	1kΩ,1/6W
R7	QRD161J-333	RESISTOR	33kΩ,1/6W
R8	QRX014J-R39Z	MF RESISTOR	0.39Ω,1W
R9	QRG029J-683G	OMF RESISTOR	68kΩ,2W
R10	QRG029J-561A	OMF RESISTOR	560Ω,2W
R11	QRD161J-152	RESISTOR	1.5kΩ,1/6W
R13	QRD161J-102	RESISTOR	1kΩ,1/6W
R14	QRD161J-392	RESISTOR	3.9kΩ,1/6W
R15	QRD161J-683	RESISTOR	68kΩ,1/6W
R31	QRG01DJ-110X	MF RESISTOR	11Ω,1W
⚠ R32	QRZ0077-470X	FUSIBLE RESISTOR	47Ω,1/4W
⚠ R33	QRG02DJ-222X	OMF RESISTOR	2.2kΩ,2W
R34	QRV144F-4870AY	CMF RESISTOR	487Ω,1/4W
R35	QRD161J-471	RESISTOR	470Ω,1/6W
R36	QRV144F-3740AY	CMF RESISTOR	374Ω,1/4W
R37	QRD161J-122	RESISTOR	1.2kΩ,1/6W
⚠ C2	QFZ9022-223	F CAPACITOR	0.022μF
⚠ C4	QCZ9016-101K	CAPACITOR	100pF
⚠ C5	QCZ9016-101K	CAPACITOR	100pF
⚠ C9	QCZ9026-102	CAPACITOR	0.001μF
C10	PECA0793-686	E CAPACITOR	68μF,400V
C12	QETC1HM-225	E CAPACITOR	2.2μF,50V
C13	QCZ0212-472	CAPACITOR	0.0047μF,1kV
C16	QFLA1HJ-822Z	F CAPACITOR	0.0082μF,50V
C19	QCBB1HJ-391	CAPACITOR	390pF,50V
C21	QFV11HJ-104AZ	F CAPACITOR	0.1μF,50V
C31	QETC1JM-226	E CAPACITOR	22μF,63V
C32	QEGB1CM-477	E CAPACITOR	470μF,16V
C33	QEGB1AM-477	E CAPACITOR	470μF,10V
C34	QETC1HM-226	E CAPACITOR	22μF,50V
C35	QEM91AM-107	E CAPACITOR	100μF,10V
C36	QETB1AM-477	E CAPACITOR	470μF,10V
C37	QETB1EM-227	E CAPACITOR	220μF,25V
C38	QETC1HM-474	E CAPACITOR	0.47μF,50V
C39	QFLA1HJ-103Z	F CAPACITOR	0.01μF,50V
C40	QEGB1EM-227	E CAPACITOR	220μF,25V
C42	QETB1CM-477	E CAPACITOR	470μF,16V
L31	PELN0687	COIL	
L32	PELN0687	COIL	
L33	PELN0687	COIL	
⚠ PC1	PS2561L-1(WL)	PH COUPLER	
⚠ T1	PELN0987-02	SW TRANS	
⚠ AO1	PEMC1067	AC INLET	
⚠ BKT1	PQ21649-1-6	TRANS BRACKET	
⚠ FC1	PEMC0965-Z	FUSE CLIP	
⚠ FC2	PEMC0965-Z	FUSE CLIP	
⚠ HS1	PQ45788-1-1	HEAT SINK,Q1	
⚠ LF2	PU59707	LINE FILTER	
SCW1	SDST3006Z	SCREW,X3	
SCW2	SDSB3008M	SCREW	
SCW3	SDST3006Z	SCREW	
⚠ SLD1	PQ35100-1-1	SHIELD COVER	
CN1	PEMC0978-111	CONNECTOR,(1-11) MAIN	
⚠ CP1	ICP-N20	CIRCUIT PROTECTOR	
⚠ F1	QMF51E2-1R25	FUSE	T1.2A

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MAIN BOARD ASSEMBLY <03>

PWBA	PB10871A-01	MAIN BOARD ASSY,J71MS
	PB10871B-01	MAIN BOARD ASSY,J51MS
SPC1	PQM30029-219	SPACER
CN1	PEMC0969-108	CONNECTOR,(1-8) A EFFECT
CN2	PEMC0969-110	CONNECTOR,(1-10) A EFFECT
CN3	PU60910-7	CONNECTOR,(1-7) A/C HEAD

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
CN4	PU60910-2	CONNECTOR,(1-2) FE HEAD	
CN5	PU60910-6	CONNECTOR,(1-6) PRE/REC J71MS	
CN201	PEMC1055-018	CONNECTOR,(2-19) PRE/REC	
CN402	PEMC0915-004	FFC CONNECTOR,(1-4) DRUM	
CN601	PEMC0915-018	FFC CONNECTOR,(1-18) D.TERMIN	
CN801	PEMC0975-011	CONNECTOR,(1-11) SW REG	
CN802	PEMC0915-009	FFC CONNECTOR,(1-9) FRONT	

- TUNER SECTION -

⚠ RF1	PERF0181	RF CONVERTER	
⚠ TNR1	PERF0179	TUNER	
IC901	AN1358	IC	
	or AN6562-SG	IC	
	or M5223P	IC	
	or TA75358P	IC	
IC902	M50253P	IC	
	or BU2090	IC	
Q901	2SC4081(RS)	TRANSISTOR	
Q902	DTA123YU	TRANSISTOR	
Q903	DTA123YU	TRANSISTOR	
Q904	DTA123YU	TRANSISTOR	
Q905	2SB810H,J	TRANSISTOR	
Q906	2SD1450S,T	TRANSISTOR	
	or 2SD1468S(RS)	TRANSISTOR	
Q907	DTA144TU	TRANSISTOR	
Q911	DTC143EU	TRANSISTOR	
D901	HZT31	ZENER DIODE	
R901	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R902	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R903	QRSA08J-221YN	RESISTOR	220Ω,1/10W
R904	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
R905	QRSA08J-154YN	RESISTOR	150kΩ,1/10W
R906	QRSA08J-154YN	RESISTOR	150kΩ,1/10W
R907	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
R908	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
R909	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R917	QRD161J-182	RESISTOR	1.8kΩ,1/6W
R918	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
R919	QRSA08J-331YN	RESISTOR	330Ω,1/10W
R920	QRSA08J-683YN	RESISTOR	68kΩ,1/10W
R921	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
R922	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
R923	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
R924	QRSA08J-224YN	RESISTOR	220kΩ,1/10W
R925	QRSA08J-564YN	RESISTOR	560kΩ,1/10W
R926	QRSA08J-272YN	RESISTOR	2.7kΩ,1/10W
R927	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R931	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R962	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R963	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R964	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
C901	QCYA1HK-103	CAPACITOR	0.01μF,50V
C902	QFLC1HJ-333Z	F CAPACITOR	0.033μF,50V
C903	QFLC1HJ-153Z	F CAPACITOR	0.015μF,50V
C904	QETF1HM-106	E CAPACITOR	10μF,50V
C906	QETF1HM-106	E CAPACITOR	10μF,50V
C907	QETF1CM-476	E CAPACITOR	47μF,16V
C908	QCYA1HK-103	CAPACITOR	0.01μF,50V
C909	QETF1CM-476	E CAPACITOR	47μF,16V
C910	QEKF1HM-225	E CAPACITOR	2.2μF,50V
C912	QEKF1HM-224	E CAPACITOR	0.22μF,50V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C913	QEKF1HM-225	E CAPACITOR	2.2μF,50V
C931	QCYA1HK-103	CAPACITOR	0.01μF,50V
WR1	PW30402-BB10M	COAXIAL ASSY	

- VIDEO SECTION -

IC202	MM1113XF	IC	
IC203	BA7045	IC	
IC204	M50253P	IC	
	or BU2090	IC	
Q201	2SC1740S(RS)	TRANSISTOR	
	or 2SC3199(GB)-TJK	TRANSISTOR	
	or 2SC3311A(RS)	TRANSISTOR	
	or 2SC536SPA(FG)	TRANSISTOR	
Q202	2SC1740S(RS)	TRANSISTOR	
	or 2SC3199(GB)-TJK	TRANSISTOR	
	or 2SC3311A(RS)	TRANSISTOR	
	or 2SC536SPA(FG)	TRANSISTOR	
Q203	2SC4081(RS)	TRANSISTOR	
Q205	2SC4081(RS)	TRANSISTOR	
Q206	2SA933S(RS)	TRANSISTOR	
	or 2SA1267(YG)-TJK	TRANSISTOR	
Q207	2SA933S(RS)	TRANSISTOR	
	or 2SA1267(YG)-TJK	TRANSISTOR	
Q208	2SC1740S(RS)	TRANSISTOR	
	or 2SC3199(GB)-TJK	TRANSISTOR	
	or 2SC3311A(RS)	TRANSISTOR	
	or 2SC536SPA(FG)	TRANSISTOR	
Q209	DTA144WU	TRANSISTOR	
Q210	2SC4081(RS)	TRANSISTOR	
Q211	DTA144WS	TRANSISTOR	
D201	1SS133	DIODE	
	or MA165	DIODE	
	or 1N4148M	DIODE	
D205	1SS133	DIODE	
	or 1N4148M	DIODE	
	or MA165	DIODE	
R201	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
R202	QRD161J-562	RESISTOR	5.6kΩ,1/6W
R203	QRD161J-363	RESISTOR	36kΩ,1/6W
R204	QRD161J-363	RESISTOR	36kΩ,1/6W
R205	QRD161J-103	RESISTOR	10kΩ,1/6W
R212	QRSA08J-561YN	RESISTOR	560Ω,1/10W
R213	QRSA08J-271YN	RESISTOR	270Ω,1/10W
R214	QRSA08J-271YN	RESISTOR	270Ω,1/10W
R215	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R216	QRSA08J-561YN	RESISTOR	560Ω,1/10W
R217	QRSA08J-271YN	RESISTOR	270Ω,1/10W
R218	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R219	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
R221	QRSA08J-511YN	RESISTOR	510Ω,1/10W
R222	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R223	QRSA08J-821YN	RESISTOR	820Ω,1/10W
R226	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R229	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
R230	QRSA08J-274YN	RESISTOR	270kΩ,1/10W
R231	QRSA08J-753YN	RESISTOR	75kΩ,1/10W
R232	QRSA08J-392YN	RESISTOR	3.9kΩ,1/10W
R233	QRSA08J-471YN	RESISTOR	470Ω,1/10W
R234	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R236	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
R237	QRSA08J-154YN	RESISTOR	150kΩ,1/10W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R238	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
R239	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R240	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
R241	QRD121J-391S	RESISTOR	390Ω,1/2W
R242	QRSA08J-750YN	RESISTOR	75Ω,1/10W
R243	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
R244	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R245	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R246	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R247	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R248	QRSA08J-152YN	RESISTOR	1.5kΩ,1/10W
R249	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R250	QRSA08J-302YN	RESISTOR	3kΩ,1/10W
R251	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R253	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R254	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R257	QRSA08J-132YN	RESISTOR	1.3kΩ,1/10W
C213	QETF0JM-476	E CAPACITOR	47μF,6.3V
C214	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C217	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C218	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C219	QCSA1HJ-300	CAPACITOR	30pF,50V
C220	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C221	QCSA1HJ-330	CAPACITOR	33pF,50V
C222	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C223	QCSA1HJ-4R0	CAPACITOR	4pF,50V
C224	QCSA1HJ-270	CAPACITOR	27pF,50V
C225	QCTA1CH-200	CAPACITOR	20pF,16V
C226	QCVB1CN-103	CAPACITOR	0.01μF,16V
C227	QEK61HM-105	E CAPACITOR	1μF,50V
C228	QCYA1HK-272	CAPACITOR	0.0027μF,50V
C229	QCTA2CH-240	CAPACITOR	24pF,160V
C230	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C231	QCTA2CH-200	CAPACITOR	20pF,160V
C232	QCTA2CH-200	CAPACITOR	20pF,160V
C234	QCYA1HK-471	CAPACITOR	470pF,50V
C235	QCFA1HZ-223	CAPACITOR	0.022μF,50V
C238	QETC1CM-476	E CAPACITOR	47μF,16V
C239	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C240	QETC0JM-108	E CAPACITOR	1000μF,6.3V
C241	QETF0JM-476	E CAPACITOR	47μF,6.3V
C242	QETF1EM-475	E CAPACITOR	4.7μF,25V
C244	QCC11CJ-104	CAPACITOR	0.1μF,16V
C245	QCVB1CN-103	CAPACITOR	0.01μF,16V
C249	QCYA1EK-104	CAPACITOR	0.1μF,25V
L201	PU48530-101K	COIL	100μH
L203	PU59152-150J	COIL	15μH
L204	PU59152-680J	COIL	68μH
L205	PU59152-270J	COIL	27μH
L206	PU59152-100J	COIL	10μH
L207	PU59152-390J	COIL	39μH
L208	PU48530-101K	COIL	100μH
EQ201	PELN0742	EQUALIZER	
DL201	PU60496	DELAY LINE	
DL202	PEVB0515	COMB FILTER	

- SERVO SECTION -

IC401	JCP0039	IC
or	HD49780NT	IC
or	HD49780ANT	IC
or	JCP0039-2	IC

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
IC441	MM1111XF	IC	
Q441	2SC4081(R)	TRANSISTOR	
D401	1SS133	DIODE	
or	1N4148M	DIODE	
or	MA165	DIODE	
D402	1SS133	DIODE	
or	1N4148M	DIODE	
or	MA165	DIODE	
D403	1SS133	DIODE	
or	1N4148M	DIODE	
or	MA165	DIODE	
R401	QRSA08J-561YN	RESISTOR	560Ω,1/10W
R402	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R403	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R404	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R405	QRSA08J-224YN	RESISTOR	220kΩ,1/10W
R406	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R407	QRD161J-102	RESISTOR	1kΩ,1/6W
R408	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R409	QRD161J-102	RESISTOR	1kΩ,1/6W
R410	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
R411	QRSA08J-225YN	RESISTOR	2.2MΩ,1/10W
R412	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
R413	QRD161J-222	RESISTOR	2.2kΩ,1/6W
R414	QRSA08J-122YN	RESISTOR	1.2kΩ,1/10W
R415	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
R416	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
R417	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
R418	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R419	QRSA08J-273YN	RESISTOR	27kΩ,1/10W
R421	QRSA08J-274YN	RESISTOR	270kΩ,1/10W
R423	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R424	QRSA08J-273YN	RESISTOR	27kΩ,1/10W
R429	QRSA08J-393YN	RESISTOR	39kΩ,1/10W
R430	QRSA08J-335YN	RESISTOR	3.3MΩ,1/10W
R431	QRSA08J-274YN	RESISTOR	270kΩ,1/10W
R432	QRSA08J-822YN	RESISTOR	8.2kΩ,1/10W
R433	QRSA08J-0R0Y	RESISTOR,J71MS	0Ω,1/10W
R436	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R437	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
R438	QRD161J-104	RESISTOR	100kΩ,1/6W
R440	QRSA08J-561YN	RESISTOR	560Ω,1/10W
R441	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R442	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
R443	QRSA08J-563YN	RESISTOR	56kΩ,1/10W
C401	QCYA1HK-102	CAPACITOR	0.001μF,50V
C402	QEKF1AM-226	E CAPACITOR	22μF,10V
C403	QEKF1AM-226	E CAPACITOR	22μF,10V
C404	QCSA1HJ-101	CAPACITOR	100pF,50V
C405	QCYA1HK-102	CAPACITOR	0.001μF,50V
C407	QCYA1HK-102	CAPACITOR	0.001μF,50V
C408	QCYA1EK-563	CAPACITOR	0.056μF,25V
C409	QCYA1HK-102	CAPACITOR	0.001μF,50V
C410	QCVB1CN-103	CAPACITOR	0.01μF,16V
C411	QCYA1EK-103	CAPACITOR	0.01μF,25V
C412	QEKF1CM-106	E CAPACITOR	10μF,16V
C413	QFV11HJ-224	F CAPACITOR	0.22μF,50V
C414	QCYA1EK-223	CAPACITOR	0.022μF,25V
C415	QEKF1EM-475	E CAPACITOR	4.7μF,25V
C416	QEKF1EM-475	E CAPACITOR	4.7μF,25V

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
	C417	QEKF1CM-106	E CAPACITOR	10μF,16V
	C418	QEKF1CM-106	E CAPACITOR	10μF,16V
	C419	QCC31CK-223	CAPACITOR	0.022μF,16V
	C420	QFV11HJ-334	F CAPACITOR	0.33μF,50V
	C421	QCSA1HJ-471	CAPACITOR	470pF,50V
	C441	QEKF1AM-226	E CAPACITOR	22μF,10V
	C442	QCYA1EK-103	CAPACITOR	0.01μF,25V
	C443	QCSA1HJ-220	CAPACITOR	22pF,50V
	C444	QCSA1HJ-470	CAPACITOR	47pF,50V
	C445	QCSA1HJ-390	CAPACITOR	39pF,50V
	C446	QCSA1HJ-101	CAPACITOR	100pF,50V
	C448	QCYA1EK-103	CAPACITOR	0.01μF,25V
	C449	QCSA1HJ-101	CAPACITOR	100pF,50V
⚠	X441	PEVB0475	CRYSTAL RESONATOR	
⚠	CP401	ICP-N15	CIRCUIT PROTECTOR	

– AUDIO SECTION –

IC1	UPC393C	IC	
	or M5233P	IC	
IC2	XRA15218	IC	
	or BA15218	IC	
IC3	XRA7795LS	IC	
	or BA7795LS	IC	
Q1	DTC144WU	TRANSISTOR	
Q2	2SC4081(QR)	TRANSISTOR	
Q3	2SA933S(QR)	TRANSISTOR	
Q4	2SA933S(QR)	TRANSISTOR	
Q5	2SD1468S(RS)	TRANSISTOR	
D1	DAN202U	DIODE,J51MS	
R1	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
R3	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
R4	QRSA08J-123YN	RESISTOR	12kΩ,1/10W
R5	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R6	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R7	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
R8	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
R10	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
R13	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R14	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
R15	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R16	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R17	QRSA08J-103YN	RESISTOR,J51MS	10kΩ,1/10W
R18	QRSA08J-0R0Y	RESISTOR,J71MS	0Ω,1/10W
	QRSA08J-123YN	RESISTOR,J51MS	12kΩ,1/10W
R19	QRSA08J-473YN	RESISTOR,J71MS	47kΩ,1/10W
R20	QRSA08J-473YN	RESISTOR,J71NS	47kΩ,1/10W
R21	QRSA08J-123YN	RESISTOR,J51MS	12kΩ,1/10W
R22	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
R23	QRSA08J-122YN	RESISTOR	1.2kΩ,1/10W
R24	QRSA08J-221YN	RESISTOR	220Ω,1/10W
R25	QRSA08J-393YN	RESISTOR	39kΩ,1/10W
R26	QRSA08J-681YN	RESISTOR	680Ω,1/10W
R27	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
R28	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R29	QRSA08J-221YN	RESISTOR	220Ω,1/10W
R30	QRSA08J-331YN	RESISTOR	330Ω,1/10W
R31	QRSA08J-473YN	RESISTOR,J71MS	47kΩ,1/10W
R32	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
R33	QRSA08J-820YN	RESISTOR	82Ω,1/10W
R34	QRSA08J-274YN	RESISTOR	270kΩ,1/10W
R35	QRSA08J-822YN	RESISTOR	8.2kΩ,1/10W

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
	R36	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
	R37	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R38	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
	R39	QRSA08J-0R0Y	RESISTOR,J71MS	0Ω,1/10W
		QRSA08J-475YN	RESISTOR,J51MS	4.7MΩ,1/10W
	R40	QRSA08J-0R0Y	RESISTOR,J71MS	0Ω,1/10W
		QRSA08J-473YN	RESISTOR,J51MS	47kΩ,1/10W
	R41	QRSA08J-183YN	RESISTOR,J51MS	18kΩ,1/10W
	R42	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
	R43	QRD161J-153	RESISTOR	15kΩ,1/6W
	R46	QRSA08J-0R0Y	RESISTOR,J51MS	0Ω,1/10W
		QRSA08J-332YN	RESISTOR,J71MS	3.3kΩ,1/10W
	R47	QRSA08J-101YN	RESISTOR,J71MS	100Ω,1/10W
	R48	QRSA08J-393YN	RESISTOR,J71MS	39kΩ,1/10W
	R49	QRSA08J-0R0Y	RESISTOR,J51MS	0Ω,1/10W
		QRSA08J-393YN	RESISTOR,J71MS	39kΩ,1/10W
	R50	QRSA08J-183YN	RESISTOR,J71MS	18kΩ,1/10W
	R51	QRSA08J-183YN	RESISTOR,J71MS	18kΩ,1/10W
	R52	QRSA08J-332YN	RESISTOR,J71MS	3.3kΩ,1/10W
	R53	QRSA08J-103YN	RESISTOR,J71MS	10kΩ,1/10W
	R54	QRSA08J-0R0Y	RESISTOR,J71MS	0Ω,1/10W
	R55	QRSA08J-273YN	RESISTOR	27kΩ,1/10W
	R56	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
	R57	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
	R58	QRSA08J-820YN	RESISTOR	82Ω,1/10W
	R59	QRSA08J-123YN	RESISTOR	12kΩ,1/10W
	R60	QRSA08J-3R3YN	RESISTOR	3.3Ω,1/10W
	R61	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
	R62	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
	R63	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
	R64	QRSA08J-273YN	RESISTOR	27kΩ,1/10W
	R65	QRSA08J-0R0Y	RESISTOR,J51MS	0Ω,1/10W
	R67	QRSA08J-0R0Y	RESISTOR,J71MS	0Ω,1/10W
		QRSA08J-102YN	RESISTOR,J51MS	1kΩ,1/10W
	R68	QRSA08J-102YN	RESISTOR,J51MS	1kΩ,1/10W
	R69	QRSA08J-561YN	RESISTOR	560Ω,1/10W
	R70	QRSA08J-121YN	RESISTOR	120Ω,1/10W
	R71	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R72	QRSA08J-274YN	RESISTOR	270kΩ,1/10W
	R73	QRSA08J-564YN	RESISTOR	560kΩ,1/10W
	R74	QRSA08J-564YN	RESISTOR	560kΩ,1/10W
	C1	QCYA1EK-103	CAPACITOR	0.01μF,25V
	C3	QCYA1EK-473	CAPACITOR	0.047μF,25V
	C6	QETF1CM-476	E CAPACITOR	47μF,16V
	C7	QCYA1HK-222	CAPACITOR	0.0022μF,50V
	C8	QETF1CM-476	E CAPACITOR	47μF,16V
	C9	QETF1CM-106	E CAPACITOR	10μF,16V
	C10	QCC11EJ-562	CAPACITOR	0.0056μF,25V
	C11	QETF1HM-105	E CAPACITOR	1μF,50V
	C12	QCC11EJ-822	CAPACITOR	0.0082μF,25V
	C13	QCC11EJ-223	CAPACITOR	0.022μF,25V
	C14	QETC1EM-475	E CAPACITOR	4.7μF,25V
	C15	QCYA1HK-681	CAPACITOR	680pF,50V
	C16	QETF1AM-336	E CAPACITOR	33μF,10V
	C17	QCYA1HK-123	CAPACITOR	0.012μF,50V
	C19	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C20	QETF1AM-226	E CAPACITOR,J51MS	22μF,10V
	C21	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C22	QCFA1EZ-104	CAPACITOR,J51MS	0.1μF,25V
	C23	QETF1CM-106	E CAPACITOR	10μF,16V
	C25	QETF1CM-106	E CAPACITOR	10μF,16V
	C26	QETF1CM-106	E CAPACITOR	10μF,16V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C27	QETF1CM-106	E CAPACITOR,J71MS	10μF,16V
C28	QETF1CM-106	E CAPACITOR,J71MS	10μF,16V
C29	QETF1CM-106	E CAPACITOR,J71MS	10μF,16V
C30	QETF1CM-106	E CAPACITOR,J71MS	10μF,16V
C31	QETF1CM-106	E CAPACITOR,J71MS	10μF,16V
C34	QCYA1HK-331	CAPACITOR	330pF,50V
C35	QFV21HJ-823	F CAPACITOR	0.082μF,50V
C36	QETF1CM-106	E CAPACITOR	10μF,16V
C37	QCYA1HK-472	CAPACITOR	0.0047μF,50V
C38	QCYA1HK-223	CAPACITOR	0.022μF,50V
C39	QETF1CM-476	E CAPACITOR,J71MS	47μF,16V
C40	QETF1CM-476	E CAPACITOR	47μF,16V
C42	QETF1CM-476	E CAPACITOR	47μF,16V
C44	QETF1CM-476	E CAPACITOR	47μF,16V
C45	QCYA1EK-223	CAPACITOR	0.022μF,25V
L1	PU58308-123J	COIL	12mH
L2	PELN0975-101JZ	COIL,J71MS	100μH
⚠ T1	PELN0832	OSC TRANSFORMER	

– SYSTEM CONTROL SECTION –

IC601	HD6433926B04F	QFP IC (MPU),J71MS	
	HD6433926B08F	QFP IC (MPU),J51MS	
IC602	AT93C56-10PC	IC	
	or XLJ93LC56A	IC	
	or 93C56/P	IC	
	or 93LC56/P	IC	
	or 93LC56B/P	IC	
IC603	MM1255XF	IC	
Q601	DTC124EU	CHIP D TRANSISTOR	
Q602	DTC124EU	CHIP D TRANSISTOR	
Q603	DTC124EU	CHIP D TRANSISTOR	
Q604	DTC124EU	CHIP D TRANSISTOR	
Q605	DTC143EU	TRANSISTOR	
Q610	DTC114TU	TRANSISTOR	
Q611	2SB1256	TRANSISTOR	
Q612	DTC143EU	TRANSISTOR	
D601	11ES2	DIODE	
D602	11ES2	DIODE	
D605	1SS133	DIODE	
	or MA165	DIODE	
	or 1N4148M	DIODE	
D606	1SS133	DIODE	
	or 1N4148M	DIODE	
	or MA165	DIODE	
D607	1SS133	DIODE	
	or MA165	DIODE	
	or 1N4148M	DIODE	
D610	1SS133	DIODE	
	or 1N4148M	DIODE	
	or MA165	DIODE	
D611	1SS133	DIODE	
	or MA165	DIODE	
	or 1N4148M	DIODE	
D612	1SS133	DIODE	
	or 1N4148M	DIODE	
	or MA165	DIODE	
D672	11ES2	DIODE	
D673	11ES2	DIODE	
R601	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R602	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R603	QRSA08J-102YN	RESISTOR	1kΩ,1/10W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R604	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R605	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R606	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R607	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R608	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R609	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R610	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R611	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R612	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R613	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R614	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R615	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R616	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R617	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R618	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R619	QRD161J-102	RESISTOR	1kΩ,1/6W
R620	QRD161J-472	RESISTOR	4.7kΩ,1/6W
R621	QRD161J-102	RESISTOR	1kΩ,1/6W
R622	QRD161J-102	RESISTOR	1kΩ,1/6W
R623	QRD161J-332	RESISTOR	3.3kΩ,1/6W
R624	QRD161J-332	RESISTOR	3.3kΩ,1/6W
R625	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R626	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R627	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R628	QRD161J-472	RESISTOR	4.7kΩ,1/6W
R629	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R630	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R631	QRD161J-472	RESISTOR	4.7kΩ,1/6W
R632	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R633	QRD161J-472	RESISTOR	4.7kΩ,1/6W
R634	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R635	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R636	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R637	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R638	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R639	QRSA08J-272YN	RESISTOR	2.7kΩ,1/10W
R640	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R641	QRSA08J-152YN	RESISTOR	1.5kΩ,1/10W
R642	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R643	QRD161J-681	RESISTOR	680Ω,1/6W
R644	QRD161J-472	RESISTOR	4.7kΩ,1/6W
R645	QRD161J-472	RESISTOR	4.7kΩ,1/6W
R646	QRD161J-472	RESISTOR	4.7kΩ,1/6W
R647	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R648	QRD161J-102	RESISTOR	1kΩ,1/6W
R649	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R650	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R651	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R652	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R653	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R654	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R655	QRD161J-103	RESISTOR	10kΩ,1/6W
R656	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
R658	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
R659	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R660	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R661	QRD161J-103	RESISTOR	10kΩ,1/6W
R662	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R663	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R664	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R665	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R666	QRSA08J-123YN	RESISTOR	12kΩ,1/10W

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
	R667	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
	R668	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R669	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
	R670	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
	R671	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R672	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R673	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R674	QRD161J-473	RESISTOR	47kΩ,1/6W
	R675	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
	R676	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R677	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R678	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R679	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
	R680	QRSA08J-471YN	RESISTOR	470Ω,1/10W
	C610	QETN0JM-228ZS	E CAPACITOR	2200μF,6.3V
	C611	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C612	QEKF0JM-107	E CAPACITOR	100μF,6.3V
	C613	QCSA1HJ-180	CAPACITOR	18pF,50V
	C614	QAT3120-450	T CAPACITOR,TIMER CLOCK	45pF
	C615	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C616	QEKF1CM-106	E CAPACITOR	10μF,16V
	C619	QCC11EK-104	CAPACITOR	0.1μF,25V
	C620	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C621	QEKF1CM-106	E CAPACITOR	10μF,16V
	C622	QEKF1CM-106	E CAPACITOR	10μF,16V
	C626	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	L601	PELN0530-101JW	COIL	100μH
△	CF601	PEVB0497	RESONATOR	
△	X601	PEVB0422	CRYSTAL RESONATOR	
△	TH601	PESC1041	POSI THERMISTOR	
△	CP601	ICP-N25	CIRCUIT PROTECTOR	
△	CP602	ICP-N20	CIRCUIT PROTECTOR	

- REGULATOR SECTION -

Q801	2SC3616(MLK)	TRANSISTOR	
Q802	2SD2166	TRANSISTOR	
Q803	2SC1740S	TRANSISTOR	
	or 2SC2785(J-E)-T	TRANSISTOR	
Q804	DTA114ES	TRANSISTOR	
Q805	2SD1450S,T	TRANSISTOR	
D802	RD5.1JSB2	DIODE	
D803	1SS133	DIODE	
	or 1N4148M	DIODE	
	or MA165	DIODE	
D804	HZ15CP	ZENER DIODE	
R801	QRD161J-471	RESISTOR	470Ω,1/6W
R802	QRD161J-473	RESISTOR	47kΩ,1/6W
R803	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R804	QRSA08J-471YN	RESISTOR	470Ω,1/10W
R805	QVPA606-471Z	V RESISTOR,SWD 5V	
R806	QRSA08J-471YN	RESISTOR	470Ω,1/10W
R808	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R811	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R812	QRD161J-511	RESISTOR	510Ω,1/6W
R813	QRD161J-471	RESISTOR	470Ω,1/6W
R815	QRG02DJ-561X	OMF RESISTOR	560Ω,2W
C801	QETF0JM-107	E CAPACITOR	100μF,6.3V
C802	QETC1CM-106	E CAPACITOR	10μF,16V
C803	QETC1CM-107	E CAPACITOR	100μF,16V
C804	QETC0JM-226	E CAPACITOR	22μF,6.3V
C805	QETC0JM-107	E CAPACITOR	100μF,6.3V

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
	C806	QFLA1HJ-102Z	F CAPACITOR	0.001μF,50V
△	CP801	ICP-N20	CIRCUIT PROTECTOR	

- TERMINAL SECTION -

D701	1SS133	DIODE	
	or MA165	DIODE	
	or 1N4148M	DIODE	
D702	1SS133	DIODE	
	or 1N4148M	DIODE	
	or MA165	DIODE	
R701	QRSA08J-750YN	RESISTOR	75Ω,1/10W
R768	QRSA08J-103YN	RESISTOR,J71MS	10kΩ,1/10W
	QRSA08J-104YN	RESISTOR,J51MS	100kΩ,1/10W
R769	QRSA08J-103YN	RESISTOR,J71MS	10kΩ,1/10W
R770	QRSA08J-0R0Y	RESISTOR,J51MS	0Ω,1/10W
	QRSA08J-221YN	RESISTOR,J71MS	220Ω,1/10W
R771	QRSA08J-221YN	RESISTOR,J71MS	220Ω,1/10W
L701	PU59152-100J	COIL	10μH
L703	PU59152-100J	COIL	10μH
J702	PU60612	MINI JACK,R PAUSE	
J703	PEMC0760-04	PIN JACK,R PAUSE	
J704	PEMC1027-02	PIN JACK,AUDIO(L)	
J705	PEMC1027	PIN JACK,AUDIO(R) J71MS	

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VIDEO UNIT BOARD ASSEMBLY <05>

PWBA1	PB10761C-04	VIDEO UNIT BOARD ASSEMBLY
IC1	TL8839P	IC
IC2	JCP0035-2	IC
Q1	2SA1576(QRS)	TRANSISTOR
Q2	2SC4081(QRS)	TRANSISTOR
Q3	2SA1576(QRS)	TRANSISTOR
Q4	2SC4081(QRS)	TRANSISTOR
Q5	2SC4081(QRS)	TRANSISTOR
Q6	2SC4081(QRS)	TRANSISTOR
Q7	2SC4081(QRS)	TRANSISTOR
Q8	DTC114WU	TRANSISTOR
Q9	2SC4081(QRS)	TRANSISTOR
Q10	2SA1576(QRS)	TRANSISTOR
Q11	DTC144WU	TRANSISTOR
Q12	DTC144WU	TRANSISTOR
Q13	DTA124EU	TRANSISTOR
Q14	2SA1576(QRS)	TRANSISTOR
Q101	2SC4081(QRS)	TRANSISTOR
Q103	2SC4081(QRS)	TRANSISTOR
Q104	2SC3936(BC)	TRANSISTOR
Q105	DTC144WU	TRANSISTOR
Q106	2SC3936(BC)	TRANSISTOR
Q107	2SC3936(BC)	TRANSISTOR
Q108	2SC4081(QRS)	TRANSISTOR
Q109	DTA144WU	TRANSISTOR
Q110	2SC3936(BC)	TRANSISTOR
Q111	2SC3936(BC)	TRANSISTOR
Q112	2SC4081(QRS)	TRANSISTOR
Q114	DTC144WU	TRANSISTOR
Q115	DTA124EU	TRANSISTOR

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
D1	DAN202U	DIODE	
D2	DAN202U	DIODE	
D3	DAP202U	DIODE	
D4	1SS133	DIODE	
D5	1SS133	DIODE	
D7	1SS292	DIODE	
D101	DAN202U	DIODE	
R1	NRSA63J-681N	RESISTOR	680Ω,1/16W
R2	NRSA63J-475N	RESISTOR	4.7MΩ,1/16W
R3	NRSA63J-361N	RESISTOR	360Ω,1/16W
R4	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R5	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R6	NRSA63J-475N	RESISTOR	4.7MΩ,1/16W
R7	NRSA63J-681N	RESISTOR	680Ω,1/16W
R9	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R10	NRSA63J-621N	RESISTOR	620Ω,1/16W
R11	NRSA63J-331N	RESISTOR	330Ω,1/16W
R12	NRSA63J-182N	RESISTOR	1.8kΩ,1/16W
R13	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
R14	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R15	NRSA63J-221N	RESISTOR	220Ω,1/16W
R16	NRSA63J-332N	RESISTOR	3.3kΩ,1/16W
R17	NRSA63J-392N	RESISTOR	3.9kΩ,1/16W
R18	NVP1301-152NZ	V.RESISTOR,NC BALANCE	
R19	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
R20	NRSA63J-681N	RESISTOR	680Ω,1/16W
R21	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R22	NRSA63J-122N	RESISTOR	1.2kΩ,1/16W
R23	NRSA63J-272N	RESISTOR	2.7kΩ,1/16W
R24	NRSA63J-821N	RESISTOR	820Ω,1/16W
R25	NVP1301-472N	V.RESISTOR,PB Y LEVEL	
R26	NRSA63J-333N	RESISTOR	33kΩ,1/16W
R27	NRSA63J-561N	RESISTOR	560Ω,1/16W
R28	NVP1301-223N	V.RESISTOR,CARRIER	
R29	NVP1301-103N	V.RESISTOR,DEVIATION	
R30	NRSA63J-432N	RESISTOR	4.3kΩ,1/16W
R31	NRSA63J-122N	RESISTOR	1.2kΩ,1/16W
R32	NRSA63J-562N	RESISTOR	5.6kΩ,1/16W
R33	NRSA63J-561N	RESISTOR	560Ω,1/16W
R34	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R36	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R38	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R39	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R40	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R41	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R42	NVP1301-153N	V.RESISTOR,EE Y LEVEL	
R43	NRSA63J-823N	RESISTOR	82kΩ,1/16W
R44	NRSA63J-334N	RESISTOR	330kΩ,1/16W
R45	NVP1301-103N	V.RESISTOR,W/D CLIP	
R46	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R47	NRSA63J-434N	RESISTOR	430kΩ,1/16W
R48	NRSA63J-272N	RESISTOR	2.7kΩ,1/16W
R49	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R50	NRSA63J-331N	RESISTOR	330Ω,1/16W
R51	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R52	NVP1301-222N	V.RESISTOR,REC COLOR LEVEL	
R53	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R54	NRSA63J-271N	RESISTOR	270Ω,1/16W
R55	NRSA63J-681N	RESISTOR	680Ω,1/16W
R56	NRSA63J-561N	RESISTOR	560Ω,1/16W
R57	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R58	NRSA63J-102N	RESISTOR	1kΩ,1/16W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R61	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R62	NRSA63J-101N	RESISTOR	100Ω,1/16W
R101	NRSA63J-223N	RESISTOR	22kΩ,1/16W
R103	NRSA63J-333N	RESISTOR	33kΩ,1/16W
R104	NRSA63J-562N	RESISTOR	5.6kΩ,1/16W
R105	NRSA63J-562N	RESISTOR	5.6kΩ,1/16W
R106	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R107	NRSA63J-473N	RESISTOR	47kΩ,1/16W
R108	NRSA63J-223N	RESISTOR	22kΩ,1/16W
R109	NRSA63J-223N	RESISTOR	22kΩ,1/16W
R110	NRSA63J-561N	RESISTOR	560Ω,1/16W
R111	NRSA63J-473N	RESISTOR	47kΩ,1/16W
R112	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R113	NRSA63J-473N	RESISTOR	47kΩ,1/16W
R114	NRSA63J-333N	RESISTOR	33kΩ,1/16W
R115	NRSA63J-472N	RESISTOR	4.7kΩ,1/16W
R116	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R117	NRSA63J-242N	RESISTOR	2.4kΩ,1/16W
R118	NRSA63G-821N	RESISTOR	820Ω,1/16W
R119	NRSA63J-472N	RESISTOR	4.7kΩ,1/16W
R120	NRSA63J-682N	RESISTOR	6.8kΩ,1/16W
R121	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R122	NRSA63J-912N	RESISTOR	9.1kΩ,1/16W
R123	NRSA63J-392N	RESISTOR	3.9kΩ,1/16W
R124	NRSA63J-331N	RESISTOR	330Ω,1/16W
R125	NRSA63G-821N	RESISTOR	820Ω,1/16W
R127	NRSA63J-333N	RESISTOR	33kΩ,1/16W
R128	NRSA63J-333N	RESISTOR	33kΩ,1/16W
R129	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R130	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R131	NRSA63J-682N	RESISTOR	6.8kΩ,1/16W
R132	NRSA63J-681N	RESISTOR	680Ω,1/16W
R133	NRSA63J-562N	RESISTOR	5.6kΩ,1/16W
R136	NRSA63J-333N	RESISTOR	33kΩ,1/16W
C1	NCS31HJ-221A	CAPACITOR	220pF,50V
C2	NCS31HG-681A	CAPACITOR	680pF,50V
C3	NCS31HG-331A	CAPACITOR	330pF,50V
C4	NCS31HJ-220A	CAPACITOR	22pF,50V
C5	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C6	NCS31HJ-150A	CAPACITOR	15pF,50V
C7	NCS31HJ-220A	CAPACITOR	22pF,50V
C8	NCS31HJ-680A	CAPACITOR	68pF,50V
C9	NCS31HG-121A	CAPACITOR	120pF,50V
C10	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C11	QCFA1HZ-473	CAPACITOR	0.047μF,50V
C12	QETC1HM-474	E CAPACITOR	0.47μF,50V
C13	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C14	QCFA1HZ-104	CAPACITOR	0.1μF,50V
C15	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C16	NCS31HJ-390A	CAPACITOR	39pF,50V
C17	NCS31HJ-180A	CAPACITOR	18pF,50V
C18	NCS31HJ-200A	CAPACITOR	20pF,50V
C19	QETC0JM-476	E CAPACITOR	47μF,6.3V
C20	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C21	NCS31HJ-330A	CAPACITOR	33pF,50V
C22	QETC1HM-474	E CAPACITOR	0.47μF,50V
C23	QETC1HM-474	E CAPACITOR	0.47μF,50V
C24	QETC1EM-475	E CAPACITOR	4.7μF,25V
C25	QETC1CM-106	E CAPACITOR	10μF,16V
C26	QETC1AM-226	E CAPACITOR	22μF,10V
C27	QETC1CM-106	E CAPACITOR	10μF,16V
C28	QETC0JM-107	E CAPACITOR	100μF,6.3V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
	C29	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C30	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C31	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C32	QETC1HM-225	E CAPACITOR	2.2μF,50V
	C33	QETC1HM-474	E CAPACITOR	0.47μF,50V
	C34	NCS31HJ-620A	CAPACITOR	62pF,50V
	C35	NCS31HG-201A	CAPACITOR	200pF,50V
	C36	QETC1EM-475	E CAPACITOR	4.7μF,25V
	C37	NCB31EK-223A	CAPACITOR	0.022μF,25V
	C40	QETC1HM-105	E CAPACITOR	1μF,50V
	C41	NCB31EK-223A	CAPACITOR	0.022μF,25V
	C42	NCS31HJ-101A	CAPACITOR	100pF,50V
	C43	NCS31HJ-390A	CAPACITOR	39pF,50V
	C44	QENC1EM-475	NP E CAPACITOR	4.7μF,25V
	C45	QETC1EM-475	E CAPACITOR	4.7μF,25V
	C46	NCF31CZ-473A	CAPACITOR	0.047μF,16V
	C47	QETC1HM-104	E CAPACITOR	0.1μF,50V
	C48	QETC1HM-474	E CAPACITOR	0.47μF,50V
	C49	NCB31CK-333A	CAPACITOR	0.033μF,16V
	C50	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C51	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C52	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C53	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C54	NCB31CK-473A	CAPACITOR	0.047μF,16V
	C55	QETC1EM-475	E CAPACITOR	4.7μF,25V
	C56	NCS31HJ-5R0A	CAPACITOR	5pF,50V
	C57	QETC1HM-105	E CAPACITOR	1μF,50V
	C58	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C59	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C60	QETC0JM-107	E CAPACITOR	100μF,6.3V
	C61	NCB31HK-103A	CAPACITOR	0.01μF,50V
	C62	NCB31HK-182A	CAPACITOR	0.0018μF,50V
	C69	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C70	NCS31HJ-390A	CAPACITOR	39pF,50V
	C101	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C104	NCS31HJ-390A	CAPACITOR	39pF,50V
	C105	NCS31HG-130A	CAPACITOR	13pF,50V
	C106	NCS31HJ-560A	CAPACITOR	56pF,50V
	C107	NCS31HJ-5R0A	CAPACITOR	5pF,50V
	C108	NCS31HJ-120A	CAPACITOR	12pF,50V
	C109	NCS31HJ-680A	CAPACITOR	68pF,50V
	C110	NCS31HJ-680A	CAPACITOR	68pF,50V
	C113	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C114	NCT08CH-220A	CAPACITOR	22pF,50V
	C115	NCT08CH-121A	CAPACITOR	120pF,50V
	C116	NCT08CH-330A	CAPACITOR	33pF,50V
	C117	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C118	NCT08CH-360A	CAPACITOR	36pF,50V
	C119	NCB31CK-473A	CAPACITOR	0.047μF,16V
	C120	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C121	QETC1EM-475	E CAPACITOR	4.7μF,25V
	C122	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C125	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	L1	PU59988-121JY	COIL	120μH
	L2	PU59988-330J	COIL	33μH
	L3	PU59988-330J	COIL	33μH
	L4	PU59988-820J	COIL	82μH
	L5	PU59988-221J	COIL	220μH
	L6	PU59153-101K	COIL	100μH
	L7	PU59988-680J	COIL	68μH
⚠	L8	PU48530-101K	COIL	100μH
	L9	PU59988-121JY	COIL	120μH

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
	L11	PU48530-561J	COIL	560μH
	L101	PU59988-820J	COIL	82μH
	LPF1	PELN0913	LOW PASS FILTER	
	LPF2	PELN0892	LOW PASS FILTER	
	DL1	PU60874	1H DELAY LINE	
⚠	X101	PEVB0386	CRYSTAL RESONATOR	
⚠	X102	PEVB0438-02	CRYSTAL RESONATOR	
⚠	X103	PEVB0444	CRYSTAL RESONATOR	
	CN1	PEMC0712-112	PIN HEADER,(2-13) MAIN	
	CN2	PEMC0712-112	PIN HEADER,(1-12) MAIN	
	CN3	PEMC0712-112	PIN HEADER,(1-12) MAIN	

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IF BOARD ASSEMBLY <07>

	PWBA	PB10857A	IF BOARD ASSY	
	IC1	LA7577V	IC	
	IC3	XRA15218	IC	
		or BA10358	IC	
	Q1	2SC2001(LK)	TRANSISTOR	
	Q18	2SC4081(RS)	TRANSISTOR	
	Q19	2SA1576(RS)	TRANSISTOR	
	D1	MTZ11B	ZENER DIODE	
	D2	SVC321SPA-B-1	V.DIODE	
	D4	DAN202U	DIODE	
	D5	DAN202U	DIODE	
	R1	NRSA63J-101N	RESISTOR	100Ω,1/16W
	R2	NRSA63J-331N	RESISTOR	330Ω,1/16W
	R5	NRSA63J-680N	RESISTOR	68Ω,1/16W
	R22	QRD161J-512	RESISTOR	5.1kΩ,1/6W
	R24	NRSA63J-182N	RESISTOR	1.8kΩ,1/16W
	R25	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R27	NRSA63J-104N	RESISTOR	100kΩ,1/16W
	R28	NRSA63J-182N	RESISTOR	1.8kΩ,1/16W
	R29	QRSA08J-822YN	RESISTOR	8.2kΩ,1/10W
	R30	QVPA603-103	V RESISTOR,RF AGC	
	R32	NRSA63J-332N	RESISTOR	3.3kΩ,1/16W
	R33	NRSA63J-824N	RESISTOR	820kΩ,1/16W
	R34	NRSA63J-334N	RESISTOR	330kΩ,1/16W
	R35	NRSA63J-334N	RESISTOR	330kΩ,1/16W
	R38	NRSA63J-151N	RESISTOR	150Ω,1/16W
	R39	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R41	NRSA63J-271N	RESISTOR	270Ω,1/16W
	R43	NRSA63J-221N	RESISTOR	220Ω,1/16W
	R44	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R46	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
	R48	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
	R49	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R58	NRSA63J-183N	RESISTOR	18kΩ,1/16W
	R61	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R62	NRSA63J-683N	RESISTOR	68kΩ,1/16W
	R63	NRSA63J-331N	RESISTOR	330Ω,1/16W
	R64	NRSA63J-332N	RESISTOR	3.3kΩ,1/16W
	R65	NRSA63J-182N	RESISTOR	1.8kΩ,1/16W
	R66	NRSA63J-561N	RESISTOR	560Ω,1/16W
	R67	NRSA63J-471N	RESISTOR	470Ω,1/16W
	R68	NRSA63J-471N	RESISTOR	470Ω,1/16W
	R70	NRSA63J-472N	RESISTOR	4.7kΩ,1/16W

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
R71	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
R73	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
R75	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
R81	NRSA63J-104N	RESISTOR	100kΩ,1/16W
R82	NRSA63J-104N	RESISTOR	100kΩ,1/16W
R83	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R84	NRSA63J-473N	RESISTOR	47kΩ,1/16W
R85	NRSA63J-473N	RESISTOR	47kΩ,1/16W
R86	NRSA63J-224N	RESISTOR	220kΩ,1/16W
R87	NRSA63J-104N	RESISTOR	100kΩ,1/16W
R88	NRSA63J-123N	RESISTOR	12kΩ,1/16W
R89	NRSA63J-103N	RESISTOR	10kΩ,1/16W
C2	QETF1CM-476	E CAPACITOR	47μF,16V
C7	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
C10	NCB31HK-102A	CAPACITOR	0.001μF,50V
C14	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
C24	QFLC1HJ-393Z	F CAPACITOR	0.039μF,50V
C25	QEK61HM-105	E CAPACITOR	1μF,50V
C27	NCB31HK-103A	CAPACITOR	0.01μF,50V
C28	NCT06CH-680A	CAPACITOR	68pF,50V
C30	NCT06CH-680A	CAPACITOR	68pF,50V
C31	NCS31HJ-331A	CAPACITOR	330pF,50V
C32	QEKF1HM-224	E CAPACITOR	0.22μF,50V
C33	NCF31HZ-473A	CAPACITOR	0.047μF,50V
C34	NCB31HK-102A	CAPACITOR	0.001μF,50V
C35	NCB31HK-103A	CAPACITOR	0.01μF,50V
C36	QETF1CM-476	E CAPACITOR	47μF,16V
C38	NCT06CH-150A	CAPACITOR	15pF,50V
C39	QFLC1HJ-683Z	F CAPACITOR	0.068μF,50V
C40	NCB31HK-102A	CAPACITOR	0.001μF,50V
C41	QEKF1HM-474	E CAPACITOR	0.47μF,50V
C42	NCT06CH-120A	CAPACITOR	12pF,50V
C43	NCT06CH-101A	CAPACITOR	100pF,50V
C44	NCB31HK-103A	CAPACITOR	0.01μF,50V
C45	NCF31HZ-223A	CAPACITOR	0.022μF,50V
C52	NCT06CH-750A	CAPACITOR	75pF,50V
C57	NCB31HK-103A	CAPACITOR	0.01μF,50V
C59	NCF31HZ-223A	CAPACITOR	0.022μF,50V
C60	NCF31HZ-223A	CAPACITOR	0.022μF,50V
C61	QCYA1HK-223	CAPACITOR	0.022μF,50V
C63	QEKF1HM-474	E CAPACITOR	0.47μF,50V
C64	QEKF1CM-106	E CAPACITOR	10μF,16V
C65	QEKF1HM-474	E CAPACITOR	0.47μF,50V
C66	QEKF1CM-106	E CAPACITOR	10μF,16V
L1	PU60025-1R8	COIL	1.8μH
L2	PU60025-2R4	COIL	2.4μH
L4	PU60025-2R0	COIL	2μH
L8	PU59152-8R2J	COIL	8.2μH
L9	PU59152-100J	COIL	10μH
L10	PU59152-820J	COIL	82μH
L12	PU59152-8R2J	COIL	8.2μH
CF1	PU32990-2	CERAMIC FILTER	
CF5	PEVB0339	C TRAP	
CF6	PEVB0537-02Z	CERAMIC FILTER	
CF7	PEVB0537-03Z	CERAMIC FILTER	
CF8	PEVB0537-04Z	CERAMIC FILTER	
SAW1	PEVB0589	SAW FILTER	
SAW2	PEVB0590	SAW FILTER	
T1	PELN0669	IF.TRANSFORMER,FM DET	
T2	PELN0443-02	IF.TRANSFORMER,AFC	
T3	PELN0444-02	IF.TRANSFORMER,VCO	
JP1	PEMC0778-108Y	PIN HEADER,(1-8) MAIN	
JP2	PEMC0778-108Y	PIN HEADER,(1-8) MAIN	

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AUDIO UNIT BOARD ASSEMBLY(J71MS ONLY) < 09 >

PWBA	PB10764A-03	AUDIO UNIT BOARD ASSEMBLY	
IC1	JCP0038	IC	
Q3	DTC143EU	TRANSISTOR	
Q4	DTC143EU	TRANSISTOR	
Q5	DTC143EU	TRANSISTOR	
Q6	DTC143EU	TRANSISTOR	
Q7	DTC143EU	TRANSISTOR	
Q8	DTC143EU	TRANSISTOR	
Q9	DTC143EU	TRANSISTOR	
R1	NRSA63J-475N	RESISTOR	4.7MΩ,1/16W
R2	NRSA63J-511N	RESISTOR	510Ω,1/16W
R3	NRSA63J-472N	RESISTOR	4.7kΩ,1/16W
R4	NRSA63J-513N	RESISTOR	51kΩ,1/16W
R5	NVP1301-333NU	V RESISTOR,L DEVIATION	
R8	NRSA63J-822N	RESISTOR	8.2kΩ,1/16W
R9	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R10	NRSA63J-123N	RESISTOR	12kΩ,1/16W
R11	NVP1301-153NU	V RESISTOR,L CARRIER NTSC	
R12	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R13	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R14	NRSA63J-183N	RESISTOR	18kΩ,1/16W
R18	NRSA63J-303N	RESISTOR	30kΩ,1/16W
R19	NRSA63J-472N	RESISTOR	4.7kΩ,1/16W
R20	NRSA63J-472N	RESISTOR	4.7kΩ,1/16W
R22	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R23	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R24	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R25	NVP1301-222NU	V RESISTOR,R CARRIER NTSC	
R26	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R27	NRSA63J-822N	RESISTOR	8.2kΩ,1/16W
R30	NVP1301-333NU	V RESISTOR,R DEVIATION	
R31	NRSA63J-513N	RESISTOR	51kΩ,1/16W
R32	NRSA63J-472N	RESISTOR	4.7kΩ,1/16W
R33	NRSA63J-511N	RESISTOR	510Ω,1/16W
R34	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R35	NRSA63J-514N	RESISTOR	510kΩ,1/16W
R38	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R41	NRSA63J-101N	RESISTOR	100Ω,1/16W
R42	NRSA63J-101N	RESISTOR	100Ω,1/16W
R49	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R50	NRSA63J-473N	RESISTOR	47kΩ,1/16W
R51	NRSA63J-473N	RESISTOR	47kΩ,1/16W
R52	NRSA63J-104N	RESISTOR	100kΩ,1/16W
R58	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
R59	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
R60	NVP1301-153NU	V RESISTOR,R CARRIER PAL	
R61	NVP1301-153NU	V RESISTOR,L CARRIER PAL	
C2	QETC1AM-336	E CAPACITOR	33μF,10V
C3	QFLC1HJ-473Z	F CAPACITOR	0.047μF,50V
C4	QETC1HM-225	E CAPACITOR	2.2μF,50V
C5	QFV21HJ-333	F CAPACITOR	0.033μF,50V
C6	QETC1AM-476	E CAPACITOR	47μF,10V
C7	QETC1CM-106	E CAPACITOR	10μF,16V

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
C8	QFLC1HJ-103Z	F CAPACITOR	0.01μF,50V
C9	QETC0JM-107	E CAPACITOR	100μF,6.3V
C10	NCB31HK-102A	CAPACITOR	0.001μF,50V
C11	QFLC1HJ-104Z	F CAPACITOR	0.1μF,50V
C12	QFLC1HJ-223Z	F CAPACITOR	0.022μF,50V
C13	NCB31HK-821A	CAPACITOR	820pF,50V
C14	QFLC1HJ-392Z	F CAPACITOR	0.0039μF,50V
C15	QFLC1HJ-333Z	F CAPACITOR	0.033μF,50V
C16	QETC1HM-105	E CAPACITOR	1μF,50V
C18	NCB31HK-561A	CAPACITOR	560pF,50V
C20	NCS31HJ-101A	CAPACITOR	100pF,50V
C21	NCS31HJ-101A	CAPACITOR	100pF,50V
C22	QFLC1HJ-392Z	F CAPACITOR	0.0039μF,50V
C23	NCB31HK-821A	CAPACITOR	820pF,50V
C24	QFLC1HJ-223Z	F CAPACITOR	0.022μF,50V
C25	QFLC1HJ-104Z	F CAPACITOR	0.1μF,50V
C26	NCB31HK-102A	CAPACITOR	0.001μF,50V
C27	QETC0JM-107	E CAPACITOR	100μF,6.3V
C28	QFLC1HJ-103Z	F CAPACITOR	0.01μF,50V
C29	QETC1CM-106	E CAPACITOR	10μF,16V
C30	QETC1AM-476	E CAPACITOR	47μF,10V
C31	QFLC1HJ-333Z	F CAPACITOR	0.033μF,50V
C32	QETC1HM-225	E CAPACITOR	2.2μF,50V
C33	QFLC1HJ-473Z	F CAPACITOR	0.047μF,50V
C34	QETC1AM-336	E CAPACITOR	33μF,10V
C36	QETC1CM-106	E CAPACITOR	10μF,16V
C39	QETC1CM-106	E CAPACITOR	10μF,16V
C40	QETC1HM-104	E CAPACITOR	0.1μF,50V
C41	QETC0JM-107	E CAPACITOR	100μF,6.3V
C42	QETC0JM-107	E CAPACITOR	100μF,6.3V
C43	QETC1AM-107	E CAPACITOR	100μF,10V
C44	QETC1CM-476	E CAPACITOR	47μF,16V
C45	QETC1AM-476	E CAPACITOR	47μF,10V
C46	QETC1CM-106	E CAPACITOR	10μF,16V
C48	QETC1CM-106	E CAPACITOR	10μF,16V
C49	QETC0JM-476	E CAPACITOR	47μF,6.3V
C50	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C51	QFV21HJ-563	F CAPACITOR	0.056μF,50V
C52	QFV21HJ-563	F CAPACITOR	0.056μF,50V
C53	QETC1HM-225	E CAPACITOR	2.2μF,50V
C56	QETC1HM-225	E CAPACITOR	2.2μF,50V
C60	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C61	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C62	NCS31HJ-150A	CAPACITOR	15pF,50V
C63	NCS31HJ-270A	CAPACITOR	27pF,50V
C64	NCS31HJ-270A	CAPACITOR	27pF,50V
C65	NCS31HJ-270A	CAPACITOR	27pF,50V
C66	NCB31EK-103A	CAPACITOR	0.01μF,25V
C67	NCB31EK-103A	CAPACITOR	0.01μF,25V
L1	PELN0530-101JZ	COIL	100μH
L2	PELN0530-101JZ	COIL	100μH
L3	PELN0530-101JZ	COIL	100μH
BPF1	PELN0679-S	BAND PASS FILTER	
BPF2	PELN0680-S	BAND PASS FILTER	
JP1	PEMC0919-126	PIN HEADER	
JP2	PEMC0919-126	PIN HEADER	

#△ REF No.	PART No.	PART NAME, DESCRIPTION	

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AUDIO/CONTROL HEAD BOARD ASSY <12>

PWBA6	PB10819A6-02	AUDIO CONTROL HEAD BOARD ASSY	
CN1	PU60910-107	WIRE TRAP,(1-7) MAIN	

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MIC AMP(1) BOARD ASSEMBLY <25>

PWBA	PB10842A2-01	MIC AMP(1)BOARD ASSY	
Q301	2SC1740S(RS)	TRANSISTOR	
	or 2SC3199(GB)-TJK	TRANSISTOR	
R301	QRD161J-472	RESISTOR	4.7kΩ,1/6W
R302	QRD161J-472	RESISTOR	4.7kΩ,1/6W
R303	QRD161J-563	RESISTOR	56kΩ,1/6W
R304	QRD161J-103	RESISTOR	10kΩ,1/6W
R305	QRD161J-102	RESISTOR	1kΩ,1/6W
R306	QRD161J-273	RESISTOR	27kΩ,1/6W
R307	QRD161J-101	RESISTOR	100Ω,1/6W
C301	QEKF1CM-476	E CAPACITOR	47μF,16V
C302	QEKF1CM-106	E CAPACITOR	10μF,16V
C303	QEKF1CM-106	E CAPACITOR	10μF,16V
C304	QCC11EJ-472	CAPACITOR	0.0047μF,25V
BKT1	PQ35118-1-3	BRACKET(MIC)	
JA301	PEMC1092	MIC JACK	
CN301	PU60910-103	CONNECTOR,(1-3) MIC AMP	

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MIC AMP(2) BOARD ASSEMBLY <26>

PWBA	PB10842A3-01	MIC AMP BOARD ASSY	
IC201	BA15218	IC	
R201	QRD161J-104	RESISTOR	100kΩ,1/6W
R202	QRD161J-122	RESISTOR	1.2kΩ,1/6W
R203	QRD161J-103	RESISTOR	10kΩ,1/6W
R204	QRD161J-273	RESISTOR	27kΩ,1/6W
R205	QRD161J-683	RESISTOR	68kΩ,1/6W
R206	QRD161J-222	RESISTOR	2.2kΩ,1/6W
C201	QCBB1HJ-101	CAPACITOR	100pF,50V
C202	QEK61HM-104	E CAPACITOR	0.1μF,50V
C203	QCBB1HJ-151	CAPACITOR	150pF,50V
C204	QEKF1CM-476	E CAPACITOR	47μF,16V
JA201	PEMC1092	MIC JACK	
CN201	PU60910-103	CONNECTOR,(1-3) MIC AMP(1)	
CN202	PU59555-105	CONNECTOR,(1-5) A EFFELT	

#△	REF No.	PART No.	PART NAME, DESCRIPTION	

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FRONT BOARD ASSEMBLY <28>

	PWBA	PB10842B1-01	FRONT BOARD ASSY,J51MS
		PB10842A-01	FRONT BOARD ASSY,J71MS
	IC1	UPD16311GC(E)	IC
		or UPD16311GC(K)	IC
		or UPD16311GC(P)	IC
	IC2	GP1U581X	IR DETECT UNIT
		or HC-377J	IR DETECT UNIT
	D1	RD4.7ES-T1B2	ZENER DIODE
	D2	1SS132	DIODE
		or 1N4148M	DIODE
	D3	1SS132	DIODE
		or 1N4148M	DIODE
	D4	1SS132	DIODE
		or 1N4148M	DIODE
	D5	1SS132	DIODE
		or 1N4148M	DIODE
	D6	1SS132	DIODE
		or 1N4148M	DIODE
	D7	1SS132	DIODE,J51MS
		or 1N4148M	DIODE
	D8	1SS132	DIODE,J71MS
		or 1N4148M	DIODE
	D9	SLC-22VR3F	LE DIODE,OPERATE
	D10	SLC-22MG3F	LE DIODE,INDEX/KARAOKE
	D11	SLC-22MG3F	LE DIODE,VISS SCAN
	D12	SLH-34MC3F	LE DIODE,WIRELESS MIC
	D13	1SS132	DIODE
		or 1N4148M	DIODE
	D14	1SS132	DIODE
		or 1N4148M	DIODE
	D15	1SS132	DIODE
		or 1N4148M	DIODE
	D16	1SS132	DIODE
		or 1N4148M	DIODE
	D22	11ES2	DIODE
		or ERA15-02	DIODE
	R1	QRD161J-333	RESISTOR 33kΩ,1/6W
	R2	QRD161J-333	RESISTOR 33kΩ,1/6W
	R3	QRD161J-333	RESISTOR 33kΩ,1/6W
	R4	QRD161J-333	RESISTOR 33kΩ,1/6W
	R5	QRD161J-333	RESISTOR 33kΩ,1/6W
	R6	QRD161J-472	RESISTOR 4.7kΩ,1/6W
	R7	QRD161J-472	RESISTOR 4.7kΩ,1/6W
	R8	QRD161J-102	RESISTOR 1kΩ,1/6W
	R11	QRD161J-333	RESISTOR 33kΩ,1/6W
	R12	QRD161J-103	RESISTOR 10kΩ,1/6W
	R13	QRD161J-331	RESISTOR 330Ω,1/6W
	R14	QRD161J-331	RESISTOR 330Ω,1/6W
	R15	QRD161J-331	RESISTOR 330Ω,1/6W
	R16	QRD161J-331	RESISTOR 330Ω,1/6W
	RA1	QRB047J-333	RESISTOR ARRAY 33kΩ,1/14W x4
	C2	QEK61HM-106	E CAPACITOR 10μF,50V
	C5	QCSB1HJ-330	CAPACITOR 33pF,50V
	C8	QCC11CJ-104	CAPACITOR 0.1μF,16V
	C9	QCSB1HJ-330	CAPACITOR 33pF,50V
	C10	QEK60JM-476	E CAPACITOR 47μF,6.3V
	C12	QEK61AM-227	E CAPACITOR 220μF,10V
	C16	QCBB1HJ-101	CAPACITOR 100pF,50V
	C202	QEK61HM-104	E CAPACITOR 0.1μF,50V
	C204	QEKF1CM-476	E CAPACITOR 47μF,16V
	L1	PU48530-101J	COIL 100μH
	S1	PU60975-2Z	TACT SWITCH,CH+
	S2	PU60975-2Z	TACT SWITCH,CH-
	S3	PU60975-2Z	TACT SWITCH,OPERATE
	S4	PU60975-2Z	TACT SWITCH,TIMER
	S5	PU60975-2Z	TACT SWITCH,FF
	S6	PU60975-2Z	TACT SWITCH,REW
	S7	PU60975-2Z	TACT SWITCH,PLAY
	S8	PU60975-2Z	TACT SWITCH,STOP/EJECT
	S9	PU60975-2Z	TACT SWITCH,SP/LP/EP
	S11	PU60975-2Z	TACT SWITCH,REC/ITR
	S12	PU60975-2Z	TACT SWITCH,PAUSE
	S15	PU60975-2Z	TACT SWITCH,CH SET
	S16	PU60975-2Z	TACT SWITCH,STORE
	S17	PU60975-2Z	TACT SWITCH,COL SYSTEM
	S19	PU60975-2Z	TACT SWITCH,C.MEMO J51MS
	S25	PU60975-2Z	TACT SWITCH,HI/NOR/MIX J71MS
	S34	PU60975-2Z	TACT SWITCH,INDEX SYST
	S35	PU60975-2Z	TACT SWITCH,MIC 1/2
	S39	PU60975-2Z	TACT SWITCH,WIRELESS MIC
△	FDP1	PEDP0106-03	FLUORESCENT DISPLAY PANEL
	BKT1	PQ35118-1-3	BRACKET(MIC)
	HD1	PQM30038-2-2	LED HOLDER
	HD2	PQM30038-6	LED HOLDER,X3
	HD3	PQ34952	FDP HOLDER(R)
	HD4	PQ34951	FDP HOLDER(L)
	SCW1	SDST3005Z	SCREW,X2
	WR1	PW30201-06610	WIRE,CN2 KARAOKE DIAL
	CN1	PEMC0915-109	FFC CONNECTOR,(1-9) MAIN

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PRE/REC AMP BOARD ASSEMBLY <43>

SLD1	PQ21512	SHIELD FRAME,PRE
PWBA	PB10854G	PRE/REC BOARD ASSY,J71MS
	PB10854H	PRE/REC BOARD ASSY,J51MS
IC501	AN3389SBNS-XE	IC
	or AN3389SB-XE	IC
IC1001	AN3380NK	IC,J71MS
Q503	2SC4081(QRS)	TRANSISTOR
Q504	2SC4081(QRS)	TRANSISTOR
Q505	2SA1576(QRS)	TRANSISTOR
Q506	2SC4081(QRS)	TRANSISTOR
Q507	2SC4081(QRS)	TRANSISTOR
Q512	DTC114WU	TRANSISTOR
Q513	DTA114WU	TRANSISTOR
Q514	DTA124EU	TRANSISTOR
Q517	DTA114WU	TRANSISTOR
Q518	DTA114WU	TRANSISTOR
Q527	DTC144WU	TRANSISTOR
Q1001	DTC124TU	TRANSISTOR,J71MS
Q1002	DTC124TU	TRANSISTOR,J71MS
Q1003	DTC124TU	TRANSISTOR,J71MS
Q1004	DTC114WU	TRANSISTOR,J71MS

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
D502	1SS133	DIODE	
	or MA165	DIODE	
	or 1N4148M	DIODE	
D505	1SS133	DIODE	
	or 1N4148M	DIODE	
	or MA165	DIODE	
D506	1SS133	DIODE,J71MS	
	or MA165	DIODE	
	or 1N4148M	DIODE	
D508	1SS133	DIODE	
	or 1N4148M	DIODE	
	or MA165	DIODE	
D509	1SS133	DIODE	
	or MA165	DIODE	
	or 1N4148M	DIODE	
R509	QRSA08J-432YN	RESISTOR	4.3kΩ,1/10W
R510	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R514	QRSA08J-681YN	RESISTOR	680Ω,1/10W
R515	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R516	QRSA08J-751YN	RESISTOR	750Ω,1/10W
R517	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R518	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R519	QRD161J-391	RESISTOR	390Ω,1/6W
R520	QRSA08J-391YN	RESISTOR	390Ω,1/10W
R521	QRSA08J-911YN	RESISTOR	910Ω,1/10W
R522	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R523	QRD161J-222	RESISTOR	2.2kΩ,1/6W
R524	QRSA08J-821YN	RESISTOR	820Ω,1/10W
R525	QRSA08J-152YN	RESISTOR	1.5kΩ,1/10W
R526	QRSA08J-122YN	RESISTOR	1.2kΩ,1/10W
R527	QRSA08J-561YN	RESISTOR	560Ω,1/10W
R528	QRSA08J-122YN	RESISTOR	1.2kΩ,1/10W
R531	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R532	QRSA08J-302YN	RESISTOR	3kΩ,1/10W
R533	QRSA08J-272YN	RESISTOR,J71MS	2.7kΩ,1/10W
R534	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R536	NRVA62D-433N	RESISTOR	43kΩ,1/16W
R537	QRSA08J-124YN	RESISTOR,J51MS	120kΩ,1/10W
	QRSA08J-154YN	RESISTOR,J71MS	150kΩ,1/10W
R539	QRD161J-334	RESISTOR	330kΩ,1/6W
R540	QRSA08J-681YN	RESISTOR,J71MS	680Ω,1/10W
R541	QRSA08J-271YN	RESISTOR	270Ω,1/10W
R542	QRSA08J-271YN	RESISTOR	270Ω,1/10W
R543	QRSA08J-301YN	RESISTOR	300Ω,1/10W
R544	QRSA08J-301YN	RESISTOR	300Ω,1/10W
R545	QRSA08J-681YN	RESISTOR	680Ω,1/10W
R546	QRD161J-0R0	RESISTOR	0Ω,1/6W
R548	QRSA08J-154YN	RESISTOR	150kΩ,1/10W
R550	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R551	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R552	QRSA08J-101YN	RESISTOR	100Ω,1/10W
R554	QRSA08J-391YN	RESISTOR	390Ω,1/10W
R570	QRD161J-472	RESISTOR,J71MS	4.7kΩ,1/6W
R571	QRSA08J-472YN	RESISTOR,J71MS	4.7kΩ,1/10W
R1001	QRSA08J-273YN	RESISTOR,J71MS	27kΩ,1/10W
R1002	QRSA08J-101YN	RESISTOR,J71MS	100Ω,1/10W
R1003	QRSA08J-101YN	RESISTOR,J71MS	100Ω,1/10W
R1004	QRSA08J-274YN	RESISTOR,J71MS	270kΩ,1/10W
R1005	QRSA08J-222YN	RESISTOR,J71MS	2.2kΩ,1/10W
R1006	QRSA08J-103YN	RESISTOR,J71MS	10kΩ,1/10W
R1007	QRSA08J-153YN	RESISTOR,J71MS	15kΩ,1/10W
R1010	QRSA08J-102YN	RESISTOR,J71MS	1kΩ,1/10W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R1011	QRD161J-102	RESISTOR,J71MS	1kΩ,1/6W
R1012	QRSA08J-560YN	RESISTOR,J71MS	56Ω,1/10W
R1013	QRSA08J-560YN	RESISTOR,J71MS	56Ω,1/10W
C504	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C505	QCVB1CN-103	CAPACITOR	0.01μF,16V
C506	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C507	QCSA1HJ-331	CAPACITOR	330pF,50V
C508	QCSA1HJ-150	CAPACITOR	15pF,50V
C509	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C510	QCSA1HJ-270	CAPACITOR	27pF,50V
C511	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C512	QCTA1CH-220	CAPACITOR	22pF,16V
C513	QCSA1HJ-471	CAPACITOR	470pF,50V
C514	QCTA1CH-120	CAPACITOR	12pF,16V
C515	QCTA1CH-4R0	CAPACITOR	4pF,16V
C516	QCC11CJ-104	CAPACITOR	0.1μF,16V
C517	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C518	QCSA1HJ-391	CAPACITOR	390pF,50V
C520	QCFA1HZ-103	CAPACITOR,J71MS	0.01μF,50V
C521	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C522	QFV11HJ-104	F CAPACITOR	0.1μF,50V
C523	QCYA1HK-333	CAPACITOR	0.033μF,50V
C524	QCSA1HJ-680	CAPACITOR	68pF,50V
C525	QCSA1HJ-560	CAPACITOR	56pF,50V
C526	QCYA1HK-333	CAPACITOR	0.033μF,50V
C527	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C528	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C529	QCYA1HK-333	CAPACITOR	0.033μF,50V
C530	QCSA1HJ-680	CAPACITOR	68pF,50V
C531	QCSA1HJ-560	CAPACITOR	56pF,50V
C532	QCYA1HK-333	CAPACITOR	0.033μF,50V
C533	QFV11HJ-104	F CAPACITOR	0.1μF,50V
C534	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C536	QER61CM-476	E CAPACITOR	47μF,16V
C537	QER60JM-476	E CAPACITOR	47μF,6.3V
C540	QCSA1HJ-470	CAPACITOR	47pF,50V
C541	QCSA1HJ-390	CAPACITOR	39pF,50V
C542	QFV11HJ-104	F CAPACITOR	0.1μF,50V
C543	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C545	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C549	QCYA1EK-104	CAPACITOR	0.1μF,25V
C550	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C551	QCTA1CH-560	CAPACITOR	56pF,16V
C554	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C556	QCSA1HJ-1R0	CAPACITOR	1pF,50V
C558	QCT30CH-8R2	CAPACITOR	8.2pF
C559	QCTA1CH-7R0	CAPACITOR	7pF,16V
C1001	QCFA1CZ-104	CAPACITOR,J71MS	0.1μF,16V
C1002	QCYA1HK-471	CAPACITOR,J71MS	470pF,50V
C1003	QCYA1HK-152	CAPACITOR,J71MS	0.0015μF,50V
C1004	QCYA1HK-152	CAPACITOR,J71MS	0.0015μF,50V
C1005	QCYA1HK-102	CAPACITOR,J71MS	0.001μF,50V
C1006	QCYA1HK-102	CAPACITOR,J71MS	0.001μF,50V
C1007	QCFA1CZ-224	CAPACITOR,J71MS	0.22μF,16V
C1008	QCYA1HK-471	CAPACITOR,J71MS	470pF,50V
C1009	QEK60JM-107	E CAPACITOR,J71MS	100μF,6.3V
C1010	QCFA1HZ-333	CAPACITOR,J71MS	0.033μF,50V
C1011	QCVB1CN-103	CAPACITOR,J71MS	0.01μF,16V
C1012	QCFA1CZ-224	CAPACITOR,J71MS	0.22μF,16V
C1013	QCSA1HJ-470	CAPACITOR,J71MS	47pF,50V
C1014	QCSA1HJ-101	CAPACITOR,J71MS	100pF,50V
C1015	QCFA1HZ-103	CAPACITOR,J71MS	0.01μF,50V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C1016	QCFA1HZ-103	CAPACITOR,J71MS	0.01μF,50V
	L501	PU48530-470J	COIL	47μH
	L503	PU48530-101J	COIL	100μH
	L504	PU59152-560J	COIL	56μH
	L505	PU59152-220J	COIL	22μH
	L506	PU59152-470J	COIL	47μH
	L507	PU59152-470J	COIL	47μH
	L508	PU59152-121J	COIL	120μH
	L509	PU59152-330J	COIL	33μH
	L510	PU59152-180J	COIL	18μH
	L1001	PELN0530-101JZ	COIL,J71MS	100μH
	CN501	PEMC1056-118	CONNECTOR,(2-19) MAIN	
	CN502	PEMC1003-009	CONNECTOR,(1-9) UPPER DRUM J7	
		PEMC1004-006	CONNECTOR,(1-6) UPPER DRUM J5	
	CN1001	PU60910-106	CONNECTOR,(1-6) MAIN,J71MS	

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DECK TERMINAL BOARD ASSEMBLY <51>

	PWBA1	PB10819A1-02	DECK TERMINAL BOARD ASSEMBLY	
⚠	IC1	BA6418N	IC	
⚠	or	XRA6418N	IC	
	Q2	PT491F	END SENSOR	
	D1	SIR-381SB3FM	LE DIODE	
	D2	RD6.2ES-T1B2	ZENER DIODE	
	or	MTZ6.2BT-77	ZENER DIODE	
	R1	QRD161J-102	RESISTOR	1kΩ,1/6W
	R3	QRD161J-331	RESISTOR	330Ω,1/6W
	R4	QRD161J-820	RESISTOR	82Ω,1/6W
	R6	QRD161J-331	RESISTOR	330Ω,1/6W
	R7	QRD161J-332	RESISTOR	3.3kΩ,1/6W
	C1	QCVB1CM-103	CAPACITOR	0.01μF,16V
	C3	QETA1CM-227	E CAPACITOR	220μF,16V
	PS1	PS5705HR	PH INTERRUPTER	
	PS2	PS5705HR	PH INTERRUPTER	
	WR1	PEWR0728-01-02	PARALLEL WIRE	
	CN1	PEMC0915-018	FFC CONNECTOR,(1-18) MAIN	
	CN2	PU60642	7PIN CONNECTOR,(1-7) CAP MDA	
	CN3	PU60640	4PIN CONNECTOR,(1-4) CASS HOU	
	CN5	PU60910-2	CONNECTOR,(1-2) LOADING MOTOR	

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CASSETTE HOUSING BOARD <56>

PWBA3	PB10819A3-02	CASSETTE HOUSING BOARD ASSY	
Q2	PN268VI	PH TRANSISTOR	
C1	QCVB1CM-103	CAPACITOR	0.01μF,16V
S1	PESW0589	PUSH SWITCH	
CN2	PU60639	4PIN SOCKET	

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	

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AUDIO EFFECT BOARD ASSEMBLY <73>

	PWBA	PB10874A	A.EFFECT BOARD ASSY,J71MS	
		PB10874B	A.EFFECT BOARD ASSY,J51MS	
⚠	TNR1	PERF0172	FM TUNER	
	IC1	LA1140	IC	
	IC2	XRA15218	IC	
	or	BA15218	IC	
	IC3	XRA15218	IC	
	or	BA15218	IC	
	IC4	BA6138	IC	
	IC5	TC9154AP	IC	
	IC6	NJM2072D	IC	
	IC7	XRA15218	IC	
	or	BA15218	IC	
	IC8	BU9250S	IC	
	IC9	BA7725S	IC	
	Q1	2SC4081(QR)	TRANSISTOR	
	Q2	2SC4081(QR)	TRANSISTOR	
	Q3	DTA114EU	TRANSISTOR	
	Q4	DTA114EU	TRANSISTOR	
	Q5	2SC4081(QR)	TRANSISTOR	
	Q6	2SC4081(QR)	TRANSISTOR,J71MS	
	Q7	2SC4081(QR)	TRANSISTOR	
	Q8	2SC4081(QR)	TRANSISTOR	
	Q9	2SC4081(QR)	TRANSISTOR	
	Q10	2SC4081(QR)	TRANSISTOR	
	Q11	2SC4081(QR)	TRANSISTOR	
	Q12	2SC4081(QR)	TRANSISTOR	
	Q13	2SC4081(QR)	TRANSISTOR	
	Q14	2SC4081(QR)	TRANSISTOR	
	D1	MTZ11CT-77	ZENER DIODE	
	D2	DA204U	DIODE	
	D3	DA204U	DIODE	
	D4	DA204U	DIODE	
	R1	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R3	QRSA08J-331YN	RESISTOR	330Ω,1/10W
	R4	QRSA08J-474YN	RESISTOR	470kΩ,1/10W
	R5	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
	R6	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
	R7	QVPA606-332Z	V RESISTOR,IF	
	R8	QRSA08J-392YN	RESISTOR	3.9kΩ,1/10W
	R9	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R10	QRSA08J-334YN	RESISTOR	330kΩ,1/10W
	R11	QRSA08J-392YN	RESISTOR	3.9kΩ,1/10W
	R12	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
	R13	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R14	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R15	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
	R16	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
	R17	QRSA08J-101YN	RESISTOR	100Ω,1/10W
	R18	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R19	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R20	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
	R21	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R22	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
	R23	QRSA08J-683YN	RESISTOR	68kΩ,1/10W
	R24	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
	R25	QRSA08J-392YN	RESISTOR	3.9kΩ,1/10W
	R26	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
R27	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R28	QRSA08J-472YN	RESISTOR,J71MS	4.7kΩ,1/10W
R29	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R30	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
R31	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
R32	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R33	QRSA08J-242YN	RESISTOR	2.4kΩ,1/10W
R34	QRSA08J-123YN	RESISTOR	12kΩ,1/10W
R35	QRSA08J-153YN	RESISTOR,J71MS	15kΩ,1/10W
R36	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
R37	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R38	QRSA08J-242YN	RESISTOR,J71MS	2.4kΩ,1/10W
R39	QRSA08J-123YN	RESISTOR	12kΩ,1/10W
R40	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R41	QRSA08J-103YN	RESISTOR,J71MS	10kΩ,1/10W
R42	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R43	QRSA08J-681YN	RESISTOR	680Ω,1/10W
R44	QRSA08J-102YN	RESISTOR,J71MS	1kΩ,1/10W
R45	QRSA08J-681YN	RESISTOR,J71MS	680Ω,1/10W
R46	QRSA08J-183YN	RESISTOR,J71MS	18kΩ,1/10W
R47	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
R48	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
R49	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R50	QRSA08J-563YN	RESISTOR,J71MS	56kΩ,1/10W
R51	QRSA08J-563YN	RESISTOR	56kΩ,1/10W
R52	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R53	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
R54	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
R55	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R56	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
R57	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
R58	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R59	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
R60	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
R61	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R62	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R63	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R66	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
R67	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
R68	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R69	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
R70	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
R71	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R72	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
R73	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
R74	QRSA08J-392YN	RESISTOR	3.9kΩ,1/10W
R75	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R76	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R77	QRSA08J-155YN	RESISTOR	1.5MΩ,1/10W
R78	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R79	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
R80	QRSA08J-154YN	RESISTOR	150kΩ,1/10W
R81	QRSA08J-122YN	RESISTOR	1.2kΩ,1/10W
R82	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R83	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R84	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R85	QRSA08J-822YN	RESISTOR	8.2kΩ,1/10W
R86	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R87	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R88	QRSA08J-123YN	RESISTOR	12kΩ,1/10W
R89	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R90	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
R91	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R92	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R93	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R94	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
R95	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
R96	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
R100	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
R101	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
R102	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R103	QRSA08J-273YN	RESISTOR	27kΩ,1/10W
R104	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
R105	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
R106	QRSA08J-273YN	RESISTOR	27kΩ,1/10W
R107	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R108	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R109	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R110	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
R111	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R112	QRSA08J-182YN	RESISTOR	1.8kΩ,1/10W
R113	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R114	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
R115	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
R116	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
C1	QCFA1EZ-104	CAPACITOR	0.1μF,25V
C2	QEKF1HM-335	E CAPACITOR	3.3μF,50V
C3	QEKF1CM-106	E CAPACITOR	10μF,16V
C4	QCYA1EK-473	CAPACITOR	0.047μF,25V
C5	QCYA1EK-473	CAPACITOR	0.047μF,25V
C6	QCYA1EK-473	CAPACITOR	0.047μF,25V
C7	QCSA1HJ-330	CAPACITOR	33pF,50V
C8	QCFA1EZ-104	CAPACITOR	0.1μF,25V
C9	QEKF1CM-106	E CAPACITOR	10μF,16V
C10	QEKF1CM-476	E CAPACITOR	47μF,16V
C11	QCYA1EK-473	CAPACITOR	0.047μF,25V
C12	QEKF1EM-475	E CAPACITOR	4.7μF,25V
C13	QCFA1EZ-473	CAPACITOR	0.047μF,25V
C14	QCYA1EK-473	CAPACITOR	0.047μF,25V
C15	QCYA1HK-562	CAPACITOR	0.0056μF,50V
C16	QCYA1HK-221	CAPACITOR	220pF,50V
C18	QEKF1CM-106	E CAPACITOR	10μF,16V
C19	QEKF1CM-106	E CAPACITOR,J71MS	10μF,16V
C20	QCFA1EZ-104	CAPACITOR	0.1μF,25V
C21	QEKF1EM-475	E CAPACITOR	4.7μF,25V
C22	QETF1AM-476	E CAPACITOR	47μF,10V
C23	QEKF1AM-336	E CAPACITOR,J71MS	33μF,10V
C24	QEKF1AM-336	E CAPACITOR	33μF,10V
C25	QETF1CM-106	E CAPACITOR	10μF,16V
C26	QCFA1EZ-104	CAPACITOR	0.1μF,25V
C27	QETF1CM-106	E CAPACITOR	10μF,16V
C28	QCFA1EZ-104	CAPACITOR	0.1μF,25V
C29	QETF1CM-106	E CAPACITOR	10μF,16V
C30	QETF1CM-476	E CAPACITOR	47μF,16V
C31	QETF1CM-476	E CAPACITOR	47μF,16V
C32	QCFA1EZ-104	CAPACITOR	0.1μF,25V
C33	QETF1CM-106	E CAPACITOR	10μF,16V
C34	QCFA1EZ-104	CAPACITOR	0.1μF,25V
C35	QCYA1EK-104	CAPACITOR	0.1μF,25V
C36	QCYA1EK-104	CAPACITOR	0.1μF,25V
C37	QETF1HM-105	E CAPACITOR	1μF,50V
C38	QCSA1HJ-470	CAPACITOR	47pF,50V
C39	QCFA1EZ-104	CAPACITOR	0.1μF,25V
C40	QCYA1HK-102	CAPACITOR	0.001μF,50V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C41	QETF1CM-106	E CAPACITOR	10μF,16V
	C42	QETF1CM-476	E CAPACITOR	47μF,16V
	C43	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C44	QCYA1HK-221	CAPACITOR	220pF,50V
	C45	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C46	QCYA1HK-682	CAPACITOR	0.0068μF,50V
	C47	QCYA1HK-122	CAPACITOR	0.0012μF,50V
	C48	QETF1CM-106	E CAPACITOR	10μF,16V
	C49	QETF1CM-226	E CAPACITOR	22μF,16V
	C50	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C51	QETF1HM-474	E CAPACITOR	0.47μF,50V
	C52	QCYA1HK-562	CAPACITOR	0.0056μF,50V
	C53	QCYA1HK-821	CAPACITOR	820pF,50V
	C54	QCYA1HK-183	CAPACITOR	0.018μF,50V
	C55	QCYA1HK-221	CAPACITOR	220pF,50V
	C56	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C57	QETF1CM-106	E CAPACITOR	10μF,16V
	C58	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C59	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C60	QETF1HM-474	E CAPACITOR	0.47μF,50V
	C61	QCYA1HK-223	CAPACITOR	0.022μF,50V
	C62	QCYA1HK-221	CAPACITOR	220pF,50V
	C63	QCYA1HK-122	CAPACITOR	0.0012μF,50V
	C64	QCYA1HK-223	CAPACITOR	0.022μF,50V
	C65	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C66	QCYA1HK-331	CAPACITOR	330pF,50V
	C67	QCYA1HK-331	CAPACITOR	330pF,50V
	C68	QEKF1CM-476	E CAPACITOR	47μF,16V
	C69	QETF1EM-475	E CAPACITOR	4.7μF,25V
	C70	QCYA1HK-123	CAPACITOR	0.012μF,50V
	L1	PELN1032	IF.TRANSFORMER	
	L2	PELN1031	IF. TRANSFORMER,AFC	
	L3	PELN0975-101JZ	COIL	100μH
	CF1	PEVB0584-Z	CERAMIC FILTER	
⚠	CF2	PEVB0585	RESONATOR	
	ETH1	PQ46115	EARTH PLATE	
	ETH2	PQ46090	EARTH PLATE	
	SCW1	SDSF3008Z	SCREW,X2	
	SCW2	SDSF3008M	SCREW,X2	
	TB1	PQ21718G	TERMINAL ASSY,J71MS	
		PQ21718J	TERMINAL ASSY,J51MS	
	CN1	PEMC0970-208	CONNECTOR,(1-8) MAIN	
	CN2	PEMC0970-210	CONNECTOR,(1-10) MAIN	
	CN3	PU59555-105	CONNECTOR,(1-5) MIC AMP	
	CN4	PEMC1093	ANT TERMINAL	

SECTION 6
TECHNICAL INFORMATIONS

6.1 SYSCON CIRCUIT

6.1.1 Syscon CPU pin function (IC601) 1/2

PIN NO.	LABEL	IN/OUT	NOTE
1	P.DOWN	IN	POWER DOWN DETECT(POWER DOWN:H → L)
2	FM S.CURVE	IN	TUNER AUDIO TUNING CHECK
3	AFC S.CURVE	IN	TUNING CHECK
4	AVGFM	IN	AUTO TRACKING DATA(AVERAGE VOLTAGE OF PB FM LEVEL) INPUT
5	AVSS	-	GND
6	TEST	-	GND
7	X2	-	MAIN SYSTEM CLOCK(10MHz)
8	X1	-	MAIN SYSTEM CLOCK(10MHz)
9	VSS	-	GND
10	OSC1	IN	SUB SYSTEM CLOCK
11	OSC2	OUT	SUB SYSTEM CLOCK
12	RESET	IN	RESET AT CONNECT VCR TO AC
13	(NMI)	-	NC
14	ECHO SCL	OUT	ECHO DATA SERIAL TRANSFER CLOCK
15	ECHO SDA	OUT	ECHO CONTROL SERIAL DATA OUTPUT
16	ECHO CS	OUT	ECHO CHIP SELECT
17	A.MUTE	OUT	AUDIO MUTE CONTROL(MUTE ON:H)
18	M.CE	OUT	MOMORY IC CHIP ENABLE
19	M.DATA	IN/OUT	MEMORY IC DATA
20	S CLK	OUT	SERIAL DATA CLOCK OUTPUT
21	EXP DATA	OUT	ABIT EXP DATA
22	TUP FG	IN	TAKE-UP REEL ROTATION DET/TAPE REMAIN
23	SUP FG	IN	SUPPLY REEL ROTATION DET/TAPE REMAIN
24	START S.	IN	LEADER TAPE DETECT(DETECT ON:L)
25	CASS	IN	CASSETTE SENSOR (SENSOR ON:L)
26	LSA	IN	MECHANISM MODE DETECT
27	LSB	IN	MECHANISM MODE DETECT
28	REC SF	IN	REC SAFETY SW DETECT (SW ON:L)
29	END SENS	IN	TRAILER TAPE DETECT(DETECT ON:L)
30	CAP REV	OUT	CAPSTAN MOTOR CONTROL (FWD:H/REV:L)
31	H SEL	OUT	HEAD SELECT CONTROL(SP:L/LP:M/EP:H)
32	A/M/S	OUT	PRE/REC CIRCUIT CONTROL(AUTO:M/MANUAL:H/S&S:L)
33	REC	OUT	REC MODE:H
34	REC ST	OUT	REC START:H
35	HRECST(H)	OUT	HiFi AUDIO REC START:L
36	NTSC SP(L)/ND(L)	OUT	NTSC SP MODE:L/NORMAL AUDIO DETECT (NORMAL AUDIO:L)
37	AI DATA	OUT	AUDIO CONTROL DATA OUTPUT
38	AI CLK	OUT	AUDIO DATA TRANSFER CLOCK
39	LCM1	OUT	LOADING MOTOR DRIVE(1)
40	LCM2	OUT	LOADING MOTOR DRIVE(2)

Table 6-1-1-A SYSCON CPU pin function (1/2)

6.1.2 Syscon CPU pin function (IC601) 2/2

PIN NO.	LABEL	IN/OUT	NOTE
41	JSA	IN	JOG PULSE INPUT(A)
42	JSB	IN	JOG PULSE INPUT(B)
43	STL	IN	SHUTTLE SWITCH
44	KILLER CTL	OUT	B/W CONTROL
45	VPCTL	OUT	V. PULSE ADDITION TIMING CONTROL
46	S/L/E CTL	OUT	SP/LP/EP MODE CONTROL
47	YNR CTL	OUT	PICTURE CONTROL (YNR CTL:L)
48	MESECAM DET	IN	MESECAM DETECT(PAL:H)
49	COLOR CTL	OUT	NC
50	RC IN	IN	REMOTE CONTROL DATA INPUT
51	MUSIC DET	IN	NC
52	CTL P	IN	CTL PULSE INPUT(MODE DETECT/BLANK PORTION DET)
53	V. SYNC	IN	V SYNC INPUT for SIGNAL DETECT
54	EXP V. DATA	OUT	VIDEO CONTROL DATA OUTPUT
55	SERVO	OUT	CAPSTAN MOTOR CONTROL(SERVO:L/MECHACON:H)
56	PAUSE	OUT	CAPSTAN MOTOR CONTROL(PAUSE:L)
57	S-OUT	OUT	ON SCREEN CONTROL DATA
58	S-IN	IN	ON SCREEN /FDP CONTROL DATA
59	S-CLK	OUT	DATA TRANSFER CLOCK
60	SERVO DATA	OUT	SERVO IC CONTROL DATA
61	STB	OUT	CLOCK OUTPUT PERMISSION
62	SERVO CLK	OUT	DATA TRANSFER CLOCK
63	VCC	-	SYSTEM POWER
64	V. UP(H)	OUT	MOTOR DRIVE VOLTAGE SELECT (M17V:H)
65	DUTY I/O	IN/OUT	IN/OUT INDEX DATA CONTROL
66	PCTL(H)	OUT	POWER CONTROL(POWER ON:H)
67	CPLS	IN	INDEX CONTROL
68	PWM	OUT	CHANNEL DATA
69	CAP FG	IN	TAPE SPEED DETECT/BACK SPACE COUNT
70	PROTECT	IN	POWER PROTECT DETECT (POWER OFF:L)
71	D. FF	IN	DRUM ROTATION DETECT/REC TIMING CONTROL
72	AVCC	-	SYSTEM POWER(for ANALOG)
73	PAUSE IN	IN	PAUSE CONTROL(PAUSE ON:L)
74	ECHO EVR	OUT	ECHO VOLUME CONTROL
75	DRUM V	OUT	DRUM MOTOR CONTROL
76	CAP V	OUT	CAPSTAN MOTOR CONTROL
77	D. V. DET	IN	DRUM VOLTAGE DETECT
78	A. LEVEL L	IN	AUDIO INDICATOR LEVEL INPUT (Lch)
79	A. LEVEL R	IN	AUDIO INDICATOR LEVEL INPUT (Rch)
80	SYNC DET	IN	V. SYNC DETECT

Table 6-1-1-B SYSCON CPU pin function (2/2)

E. & O. E. No. 8Z428